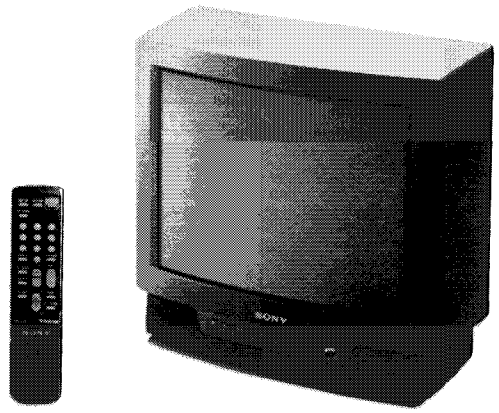
SONY KV-21STR2/3

MODEL

SERVICE MANUAL

# KV-20TS29/20TS32
# KV-21STR2/2170RS
## RM-Y116

# SERVICE MANUAL



RM-Y116

## US Model
*KV-20TS29 Chassis No. SCC-F78A-A*
*KV-20TS32 Chassis No. SCC-F78B-A*

## Canadian Model
*KV-20TS29 Chassis No. SCC-F79A-A*

## WP Model
*KV-21STR2 Chassis No. SCC-F81A-A*

## E Model
*KV-2170RS Chassis No. SCC-F80A-A*

# BA-1 CHASSIS

| MODELS OF THE SAME SERIES | |
|---|---|
| KV-20TS29/20TS32 | |
| KV-21STR2/2170RS | |
| KV-20TR23/2160WR/2150R | |

### SPECIFICATIONS

| | |
|---|---|
| Television system | American TV standards |
| Channel coverage | VHF: 2-13<br>UHF: 14-69<br>CABLE TV: 1-125 |
| Picture tube | Hi-Black Trinitron® tube<br>20-inch picture measured diagonally<br>21-inch picture tube measured diagonally |
| Antenna | 75 ohm external antenna terminal for VHF/UHF |
| Input | VIDEO and S VIDEO<br>S VIDEO IN (S terminal) (KV-20TS32)<br>Y : 1Vp-p, 75-ohms unbalanced, sync negative<br>C : 0.286Vp-p (Barst signal) 75-ohms<br>Video (phono jacks) : 1 Vp-p, 75-ohms unbalanced, sync negative<br>Audio (phono jacks) :<br>500 mVrms (100% modulation)<br>Impedance : 47 kilohms |
| Speaker output | 2W×2 (8 ohms) |
| Speaker size | Full range 50×90 mm (2×3 5/8 in.)× 2 units |
| Audio frequency response | 50Hz-20kHz |
| Power requirements | 120V AC, 60Hz<br>110-127V or 220-240V AC, 50-60Hz (KV-21STR2 only) |
| Power consumption | 120W |
| Standby mode | 4W<br>5.5W (KV-21STR2 only) |
| Dimensions (w/h/d) | 526×488×471.5 mm (20 3/4×19 1/4×18 5/8 inches) |
| Weight | 22.8 kg (50 lbs 4 oz) |

- Continued on next page -

MICROFILM

TRINITRON® COLOR TV

SONY®

| | |
|---|---|
| Supplied accessories | Remote Commander RM-Y116 (1)<br>with 2 size AA (R6)<br>EVEREADY batteries<br>Dipole antenna (1)<br>Antenna connector (1)<br>Power cord plug adaptor *<br>(KV-21STR2 only) |
| Recommended accessories | U/V mixer EAC-66<br>Connecting cord<br>VMC-810S/820S, VMC-720M<br>YC-15V/30V, RK-74A |

* AC power cord connection
If the power cord plug cannot be inserted into the wall outlet, use the supplied power cord plug adaptor.

Design and specifications are subject to change without notice.

**WARNING!!**

**AN ISOLATION TRANSFORMER SHOULD BE USED DURING ANY SERVICE TO AVOID POSSIBLE SHOCK HAZARD, BECAUSE OF LIVE CHASSIS.**
**THE CHASSIS OF THIS RECEIVER IS DIRECTLY CONNECTED TO THE AC POWER LINE.**

**SAFETY-RELATED COMPONENT WARNING !!**

**COMPONENTS IDENTIFIED BY SHADING AND MARK ⚠ ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY. CIRCUIT ADJUSTMENTS THAT ARE CRITICAL TO SAFE OPERATION ARE IDENTIFIED IN THIS MANUAL. FOLLOW THESE PROCEDURES WHENEVER CRITICAL COMPONENTS ARE REPLACED OR IMPROPER OPERATION IS SUSPECTED.**

**ATTENTION!!**

**AFIN D'EVITER TOUT RISQUE D'ELECTROCUTION PROVENANT D'UN CHÁSSIS SOUS TENSION, UN TRANSFORMATEUR D'ISOLEMENT DOIT ETRE UTILISÉ LORS DE TOUT DÉPANNAGE.**
**LE CHÁSSIS DE CE RÉCEPTEUR EST DIRECTEMENT RACCORDÉ Á L'ALIMENTATION SECTEUR.**

**ATTENTION AUX COMPOSANTS RELATIFS ÁLA SÉCURITÉ!!**

**LES COMPOSANTS IDENTIFIÉS PAR UNE TRAME ET PAR UNE MAPQUE ⚠ SUR LES SCHÉMAS DE PRINCIPE, LES VUES EXPLOSÉES ET LES LISTES DE PIECES CONT D'UNE IMPORTANCE CRITIQUE POUR LA SÉCURITÉ DU FONCTIONNEMENT. NE LES REMPLACER QUE PAR DES COMPOSANTS SONY DONT LE NUMÉRO DE PIÉCE EST INDIQUÉ DANS LE PRÉSENT MANUEL OU DANS DES SUPPLÉMENTS PUBLIÉS PAR SONY. LES RÉGLAGES DE CIRCUIT DONT L'IMPORTANCE EST CRITIQUE POUR LA SÉCURITÉ DU FONCTIONNEMENT SONT IDENTIFIES DANS LE PRÉSENT MANUEL. SUIVRE CES PROCÉDURES LORS DE CHAQUE REMPLACEMENT DE COMPOSANTS CRITIQUES, OU LORSQU'UN MAUVAIS FONCTIONNEMENT EST SUSPECTÉ.**

# SAFETY CHECK-OUT

**(US Model only)**

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Check that all control knobs, shields, covers, ground straps, and mounting hardware have been replaced. Be absolutely certain that you have replaced all the insulators.
4. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
5. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
6. Check the line cord for cracks and abrasion. Recommend the replacement of any such line cord to the customer.
7. Check the condition of the monopole antenna (if any).
   Make sure the end is not broken off, and has the plastic cap on it. Point out the danger of impalement on a broken antenna to the customer, and recommend the antenna's replacement.
8. Check the B+ and HV to see they are at the values specified. Make sure your instruments are accurate; be suspicious of your HV meter if sets always have low HV.
9. Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

## LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microampers). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2V AC range are suitable. (See Fig. A)

## HOW TO FIND A GOOD EARTH GROUND

A cold-water pipe is guaranteed earth ground; the cover-plate retaining screw on most AC outlet boxes is also at earth ground. If the retaining screw is to be used as your earth-ground, verify that it is at ground by measuring the resistance between it and a cold-water pipe with an ohmmeter. The reading should be zero ohms. If a cold-water pipe is not accessible, connect a 60–100 watts trouble light (not a neon lamp) between the hot side of the receptacle and the retaining screw. Try both slots, if necessary, to locate the hot side of the line, the lamp should light at normal brilliance if the screw is at ground potential. (See Fig. B)

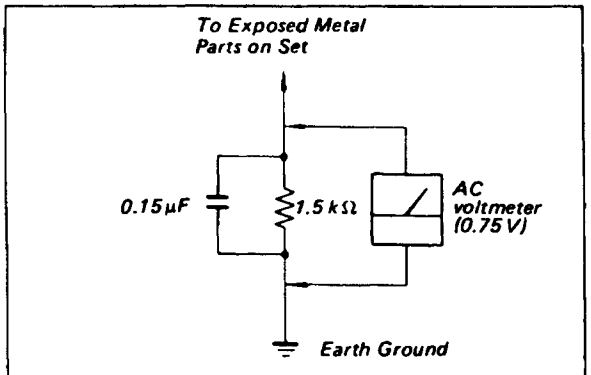



*Fig. A. Using an AC voltmeter to check AC leakage.*

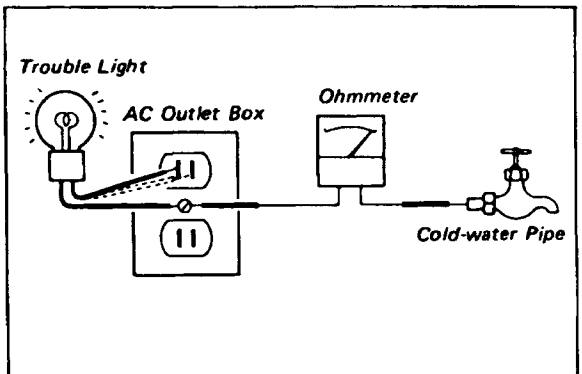



*Fig. B. Checking for earth ground.*

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# SECTION 1
# GENERAL

This section is extracted from instruction manual.

## 1-1. IDENTIFYING YOUR TV

### Identifying Your TV

**Check the model number of your TV set.**
This manual covers 11 models and there are slight differences among them. Check the table below to see what your TV is equipped with before you start operating it.

**Table of models** **YES: equipped** **NO: not equipped**

| | KV-20TS29<br>KV-2170RS<br>KV-21STR2 | KV-20TS32 |
|---|---|---|
| MTS stereo | YES | YES |
| Headphones jack | NO | YES |
| S video input jack | NO | YES |
| Front panel A/V jacks | NO | YES |

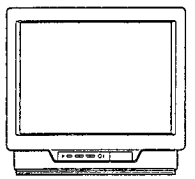
* Monaural sound is output by both headphone speakers.

| | KV-20TS29 KV-20TS32 | KV-2170RS KV-21STR2 |
|---|---|---|
| Model destination | U.S.A./Canda | Central South America and other area |
| Closed caption | YES** | NO |
| Dual Language | NO | YES |

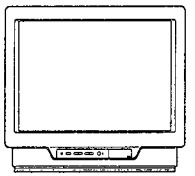
** U.S.A. models only.

### Design

KV-20TS29 KV-2170RS KV-21STR2



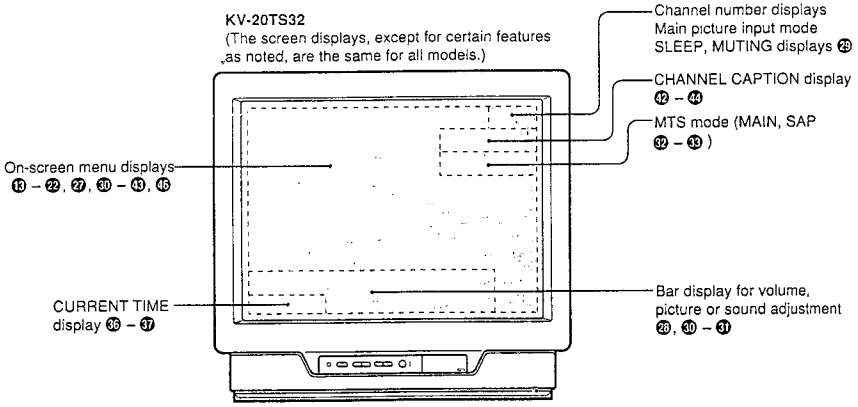
KV-20TS32



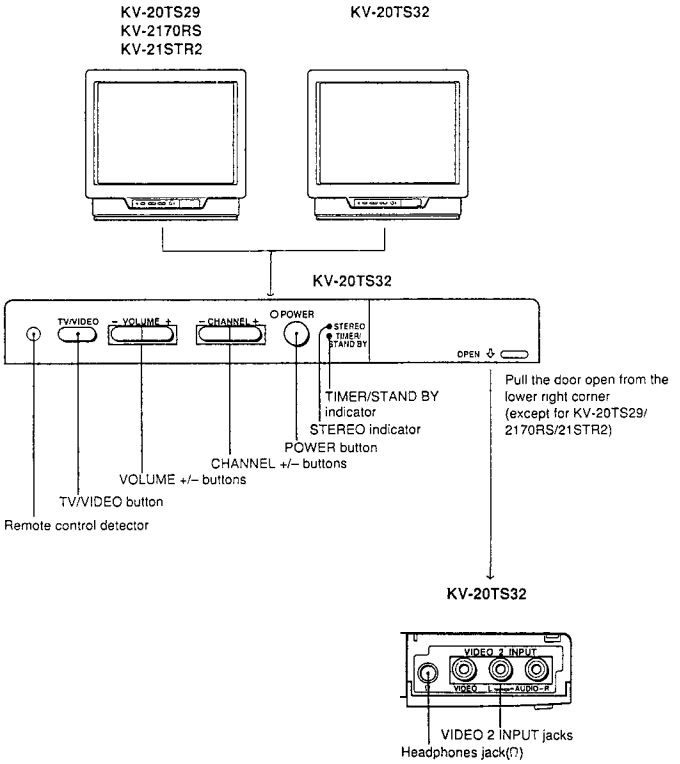
# 1-2. LOCATING THE CONTROLS

## Screen Displays

For details, see the pages indicated by the numbered black circles ●

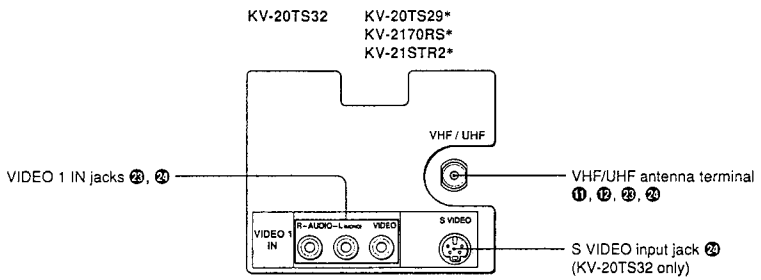

KV-20TS32
(The screen displays, except for certain features as noted, are the same for all models.)
Channel number displays
Main picture input mode
SLEEP, MUTING displays ㉙
CHANNEL CAPTION display
㊷ – ㊹
MTS mode (MAIN, SAP
㉜ – ㉝ )
On-screen menu displays
⑱ – ㉒, ㉗, ㉚ – ㉟, ㊱
CURRENT TIME
display ㉖ – ㉗
Bar display for volume,
picture or sound adjustment
㉘, ㉚ – ㉛

## Front Panel



## Rear Panel

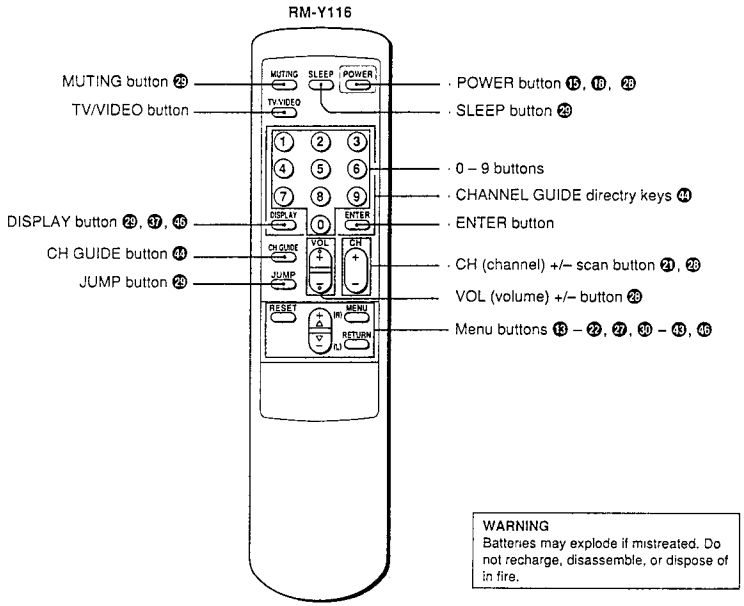
For details, see the pages indicated by the numbered black circles ●.




* These models are equipped with only one set of video input jacks.

## Remote Commander

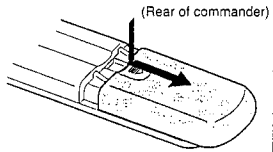
For details, see the pages indicated by the numbered black circles ●.



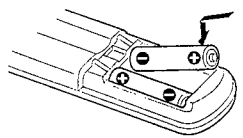

**WARNING**
Batteries may explode if mistreated. Do not recharge, disassemble, or dispose of in fire.

## Installing batteries

**1** Remove the battery compartment cover.




**2** Insert two size AA (R6) batteries in correct polarity.



**Battery life**
With normal operation, batteries will last up to half a year. If the Remote Commander dose not operate properly, the batteries might be exhausted. Replace both of them with new ones.

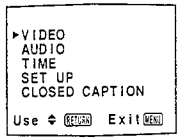
**To avoid damage from possible battery leakage**
Remove the batteries if you do not plan to use the Remote Commander for a fairly long time.

# 1-3. USING THE ON-SCREEN MENUS

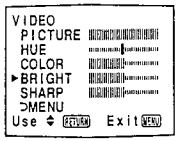
The following flow chart shows the different levels of on-screen menus that you can use to make various adjustments and settings. See the indicated pages for instructions on using each feature.

### For picture quality adjustment

Main menu



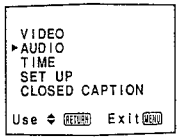

VIDEO menu (pp. 30-31)



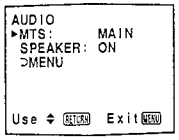

Adjustment bar

### For sound quality adjustment

Main menu

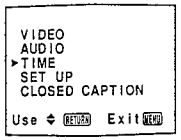



AUDIO menu (pp. 32-34)

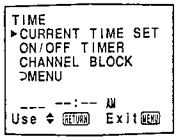


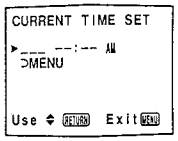

### For time-related setting

Main menu



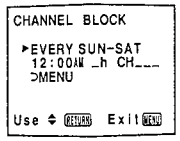

TIME menu




CURRENT TIME SET screen (pp. 36-37)

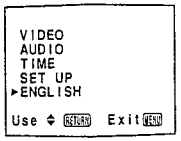
ON/OFF TIMER screen (pp. 38-39)




CHANNEL BLOCK screen (pp. 40-41)

### For language setting (pp. 15-16)

Main menu

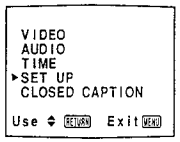



(KV-2170RS/21STR2 only)

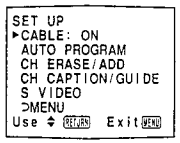


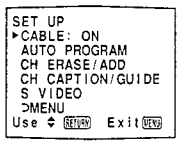
### For presetting and other functions

Main menu



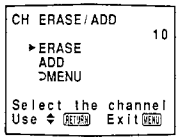

SET UP menu



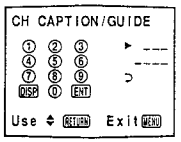




CABLE ON/OFF screen (p. 17)

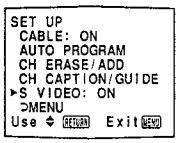
AUTO PROGRAM screen (pp. 18-19)




CHANNEL ERASE/ADD screen (pp. 20-22)



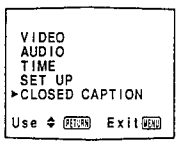

CHANNEL CAPTION/GUIDE screen (pp. 42-43)



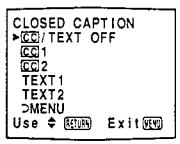

S VIDEO ON/OFF screen (p. 27)

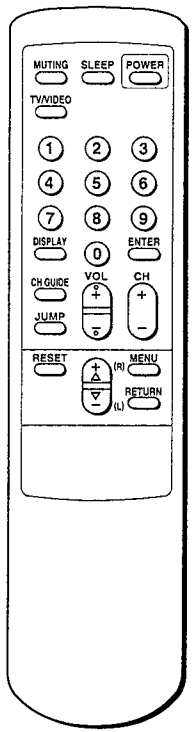
### For closed caption setting (p. 35)

Main menu




CLOSED CAPTION screen



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## Navigating Through the Menus

**To display the main menu**
Press MENU.

**To return to the previous menu**
Press △+ or ▽– to select ⊃ MENU.
Then press RETURN.

**To return to the main menu**
Repeat the above, until you reach the main menu.

**To return to the normal screen**
Press MENU on the Remote Commander.

**Note**

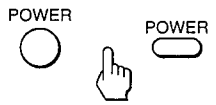
The menus disappear automatically if you do not press a button within 90 seconds.

## Changing the Menu Language

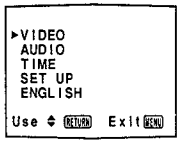
**(KV-2170RS/21STR2 only)**

The menu language is factory-set to ENGLISH. Follow these instructions to change the menu language to Spanish or back to English.

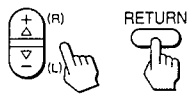
**1** Press POWER on the TV or the Remote Commander to turn the TV on.

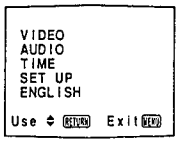



**2** Press MENU.
*The main menu appears.*



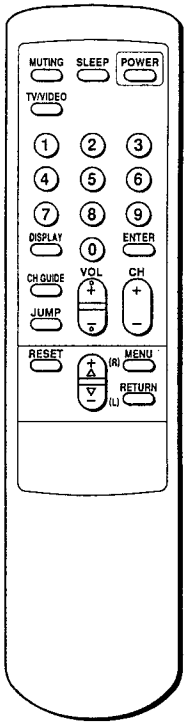

**3** Press the △+ or ▽– to select ENGLISH.
Then press RETURN.





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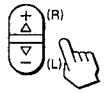
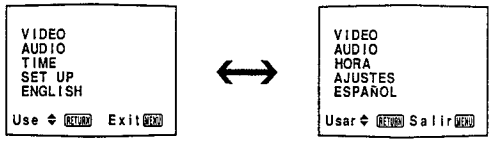
**To return to the normal screen**
Press MENU.



**4** Press △+ or ▽– to select the language.
*Each time you press △+ or ▽–, the ESPAÑOL and ENGLISH menus appear.*

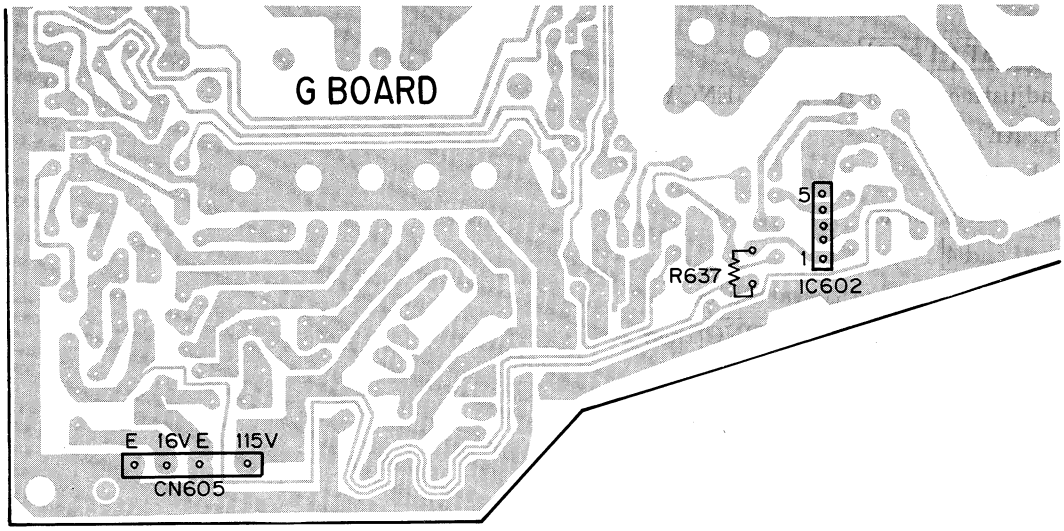


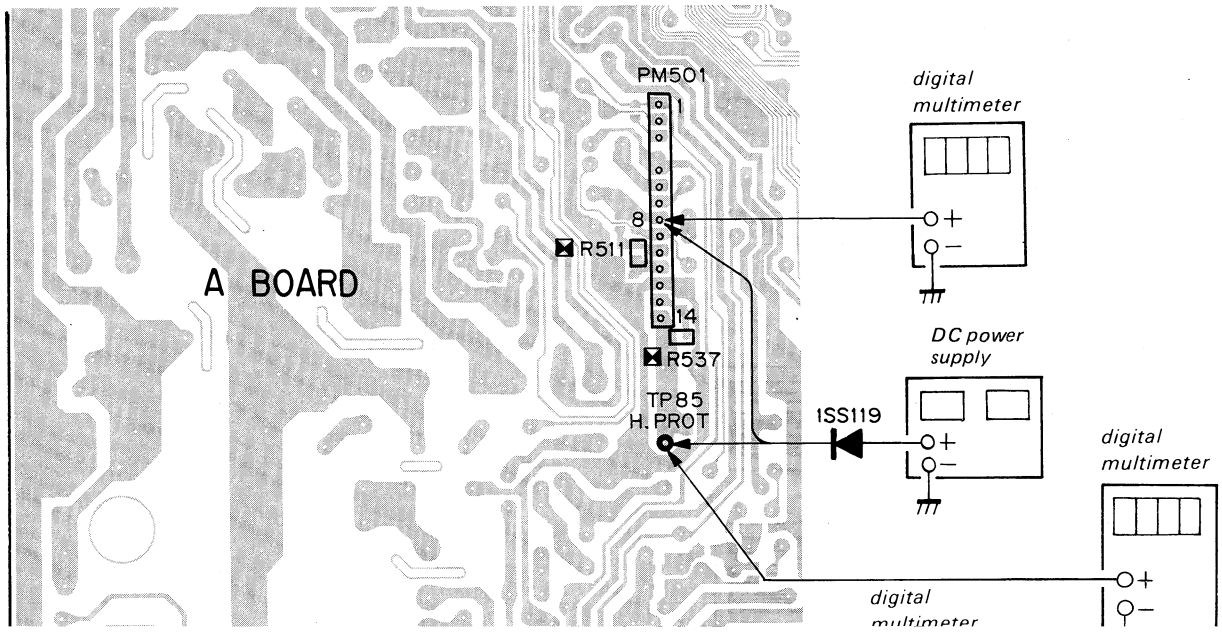



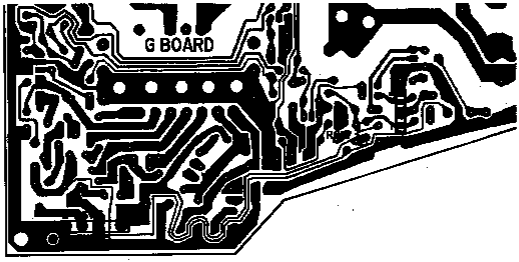

**Note**

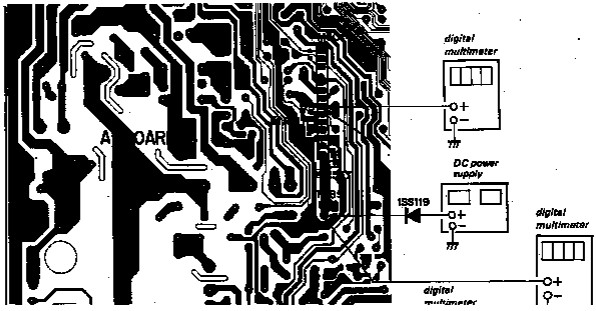
Certain parts of the ESPAÑOL menus remain in English.

**5** Press RETURN.
*The language is selected.*


G BOARD
5
1
R637
IC602
E 16V E 115V
CN605

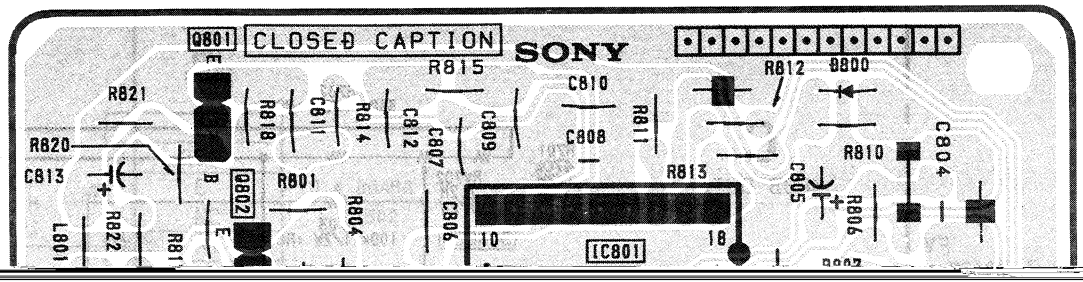

A BOARD
PM501
1
8
14
R511
R537
TP85
H. PROT
1SS119
digital
multimeter
DC power
supply
digital
multimeter
digital
multimeter


G BOARD


digital multimeter
DC power supply
1SS119
digital multimeter

# S [CLOSED CAPTION]

**— S Board —**

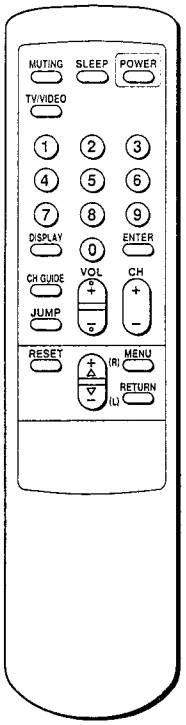


**S** [CLOSED CAPTION]

— S Board —

## 1-4. TURNING THE CABLE MODE ON OR OFF

*All of the controls are on the Remote Commander.*

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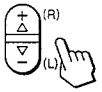
**To return to the normal screen**
Press MENU.

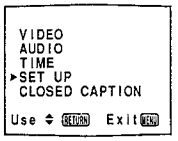
If you have cable connected to your TV (p.11), follow the steps below to turn the cable connection on or off. CABLE is preset to ON when you use your TV for the first time. Turn CABLE to OFF to preset or watch VHF or UHF channels (pp. 18–22, 28).

**1** Press MENU.
*The main menu appears.*

MENU

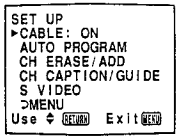
**2** Press △+ or ▽– to select SET UP.




Press RETURN.
*The SET UP menu appears, and the cursor points to CABLE.*

RETURN



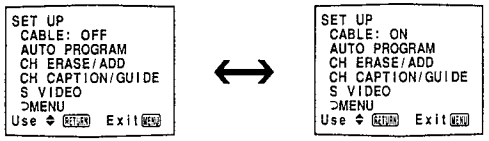

**Note**

If the CABLE display appears in black, the TV is in video mode and you cannot select CABLE. Press TV/VIDEO to change to TV mode.

**3** Press RETURN again.

RETURN

Press △+ or ▽– to select ON or OFF alternately.

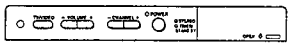


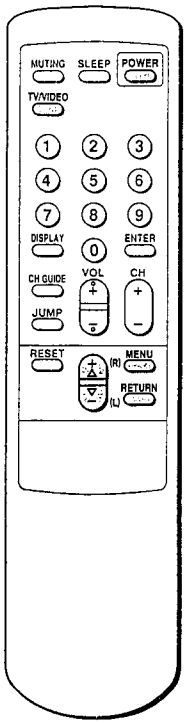

Press RETURN.
*The setting is completed.*



## 1-5. PRESETTING TV CHANNELS

By presetting TV channels to the TV, you can select channels by pressing CHANNEL +/– on the TV or CH +/– on the Remote Commander.



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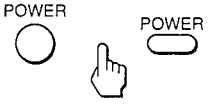
### Presetting TV Channels Automatically

**Note**

Perform auto programming during the day rather than late at night, when some channels may not be broadcasting.

**1** Press POWER on the TV or the Remote Commander to turn the TV on.

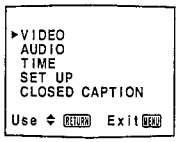
POWER



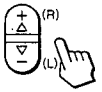

**2** Turn the cable connection on or off to select the type of channel you want to preset, VHF/UHF or cable TV.
(Follow the steps in "Turning the Cable Mode On or Off," p. 17.)

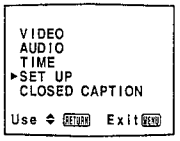
**3** Press MENU.
*The main menu appears.*

MENU



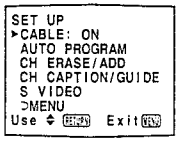

**4** Press △+ or ▽– to select SET UP.




Press RETURN.
*The SET UP menu appears.*

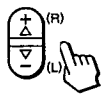
RETURN

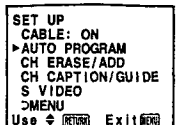



**Note**

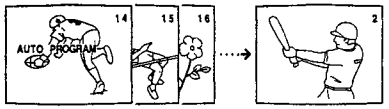
If the AUTO PROGRAM display appears in black, the TV is in video mode and you cannot select AUTO PROGRAM. Press TV/VIDEO to change to TV mode.

**5** Press △+ or ▽– to select AUTO PROGRAM.




Press RETURN.



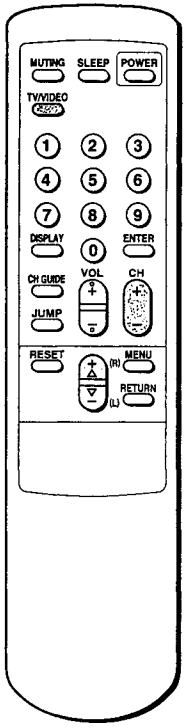

*"AUTO PROGRAM" appears on the screen and receivable channels (other than the channels already preset) are preset in numerical sequence. The channels previously preset will not remain in the TV's memory.*
*When no more channels can be found, the programming stops and the lowest numbered channel is displayed.*

**Receivable channels for this TV**
VHF: 2 – 13
UHF: 14 – 69
Cable: 1 – 125

**To select TV channels without presetting**
Press 0 – 9 and ENTER.

**To return to the normal screen**
Press MENU.

**To erase unnecessary channels, or to add channels that could not be preset automatically** because their signal was too weak, follow the steps in "Erasing Unnecessary Channels – CHANNEL ERASE" (pp. 20–21) and "Presetting Only Desired Channels – CHANNEL ADD" (p. 22).

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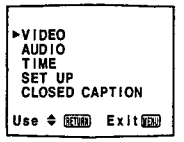
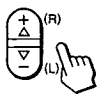
## Erasing Unnecessary Channels — CHANNEL ERASE

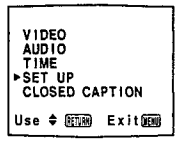
Use this feature to erase unnecessary TV channels, so that when you press CH +/–, the channel(s) are skipped.

**1** Press MENU.
*The main menu appears.*

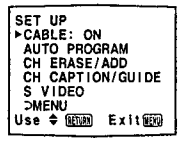



**2** Press △+ or ▽– to select SET UP.

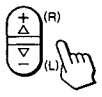


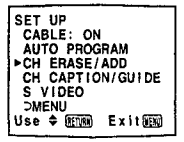




Press RETURN.
*The SET UP menu appears.*

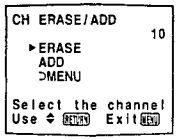



**3** Press △+ or ▽– to select CH ERASE/ADD.



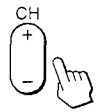

Press RETURN.
*The CH ERASE/ADD screen appears, and the cursor points to ERASE.*

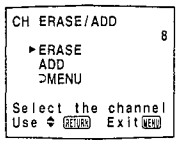



**Note**

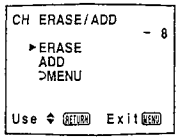
If the CHANNEL ERASE/ADD display appears in black, the TV is in video mode and you cannot select CHANNEL ERASE/ADD. Press TV/VIDEO to change to TV mode.

**4** Press the CH +/– button to select the channel you want to erase.
For example, to erase channel 8, press CH + or – until 8 appears.




Press RETURN.
*A "–" sign appears in front of the channel number display showing that the channel is erased from the channel scan memory.*




*The next time you press the CH +/– buttons, channel 8 will be skipped.*

**To erase other channels**
Repeat step 4.

**To return to the normal screen**
Press MENU.

**Note**

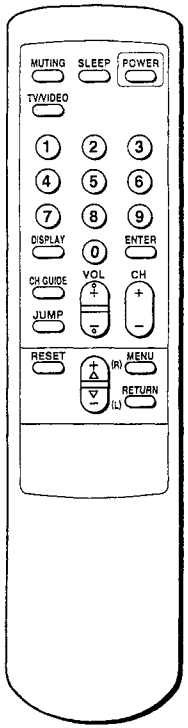
If you erase a VHF or UHF channel, the cable TV channel with the same number is also erased, and vice versa.

**Cable TV channel chart***
Cable TV systems use letters or numbers to designate channels. To tune in a channel, refer to the chart below.

| Number on this TV | Corresponding cable TV channel |
|---|---|
| 1 | A-8 |
| 5 | A-7 |
| 6 | A-6 |
| 14 | A |
| 15 | B |
| 16 | C |
| 17 | D |
| 18 | E |
| 19 | F |
| 20 | G |
| 21 | H |
| 22 | I |
| 23 | J |
| 24 | K |
| 25 | L |
| 26 | M |
| 27 | N |
| 28 | O |
| 29 | P |
| 30 | Q |
| 31 | R |
| 32 | S |
| 33 | T |
| 34 | U |
| 35 | V |
| 36 | W |
| 37 | W+1 |
| 38 | W+2 |
| 39 | W+3 |
| ⋮ | ⋮ |
| 93 | W+57 |
| 94 | W+58 |
| 95 | A-5 |
| 96 | A-4 |
| 97 | A-3 |
| 98 | A-2 |
| 99 | A-1 |
| 100 | W+59 |
| 101 | W+60 |
| 102 | W+61 |
| ⋮ | ⋮ |
| 123 | W+82 |
| 124 | W+83 |
| 125 | W+84 |

* This designation of cable TV channels conforms to the EIA/NCTA recommendation.
Check with your local cable TV company for more complete information on the available channels.



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**To return to the normal screen**
Press MENU.

**Note**

If you add a VHF or UHF channel, the cable TV channel with the same number is also added, and vice versa.



## Presetting Only Desired Channels—CHANNEL ADD

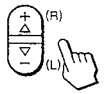
Use this feature to add channels one by one to the channel scan memory.

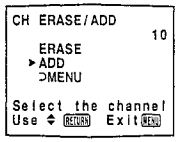
**1-3** (Follow steps 1-3 in "Erasing Unnecessary Channels – CHANNEL ERASE," p. 20.)

**Note**

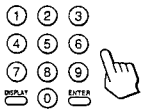
If CH ERASE/ADD display appears in black, the TV is in viedo mode and you cannot select CH ERASE/ADD. Press TV/VIDEO to change to TV mode.

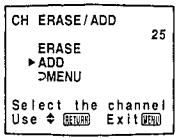
**4** Press △+ or ▽– to select ADD.



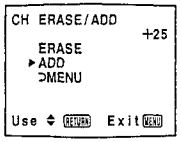




**5** Press 0–9 and ENTER to select the channel you want to add. For example, to add channel 25, press 2, 5 and ENTER.



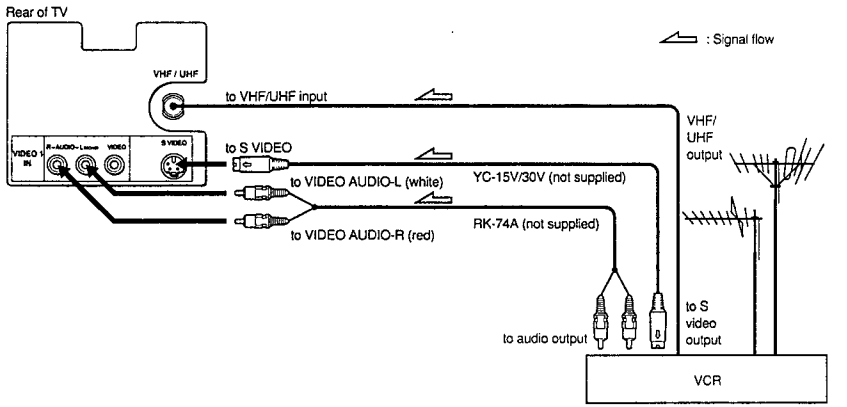

Press RETURN.
*A "+" sign appears in front of the channel number display showing that the channel is added to the channel scan memory.*




**To add other channels**
Repeat step 5.

# 1-6. CONNECTING OTHER EQUIPMENT

## Connecting video equipment to a stereo TV with an S video input jack (KV-20TS32 only)




### Preparing for use

**1** Turn on the TV.

**2** Press the TV/VIDEO button on the TV or on the Remote Commander so that "VIDEO" appears on the screen.

**When you cannot obtain a clear picture and/or sound**
Make sure that the TV/VTR on the VCR is set to TV. Reselect the channel you want to view with the controls on the TV or the Remote Commander.

**To return to TV mode**
Press the TV/VIDEO button on the TV or Remote Commander so that a channel number appears on the screen.

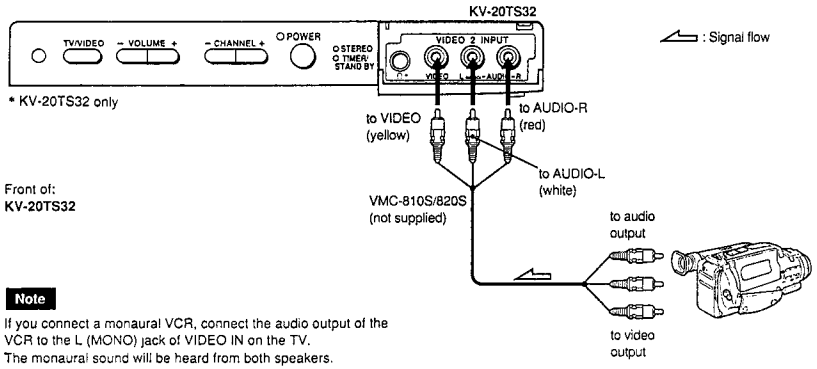
**About S video input**
Video input and output signals can be separated into Y (luminance or brightness) and C (chroma or color) signals. Usually these two signals are combined in a VCR and sent as one signal to a TV. Separation of the Y and C signals prevents them from interfering with one another, thereby improving picture (especially color) quality.
This TV is equipped with an S video input jack through which these separated signals can be input directly. This way you can connect your S video-equipped VCR separately from a non-S video VCR.

**Notes**

- For operating instructions, refer to the instruction manual furnished with the VCR.
- If the picture or sound is affected, move the VCR away from the TV.
- If S VIDEO is set to OFF, you cannot watch VCR playback pictures from the S VIDEO input.
  To set S VIDEO to ON, see "Watching a Video with Your S Video-Equipped VCR," p. 27.

## Connecting Camcorders

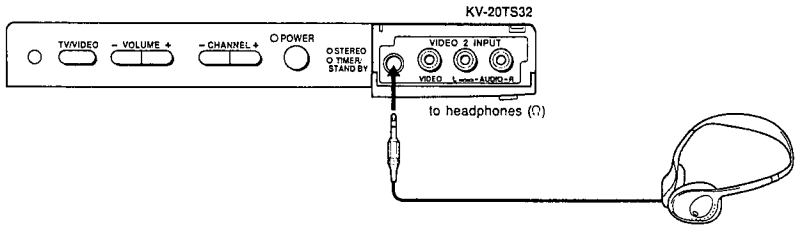
**Playing back recorded tapes**




**Note**

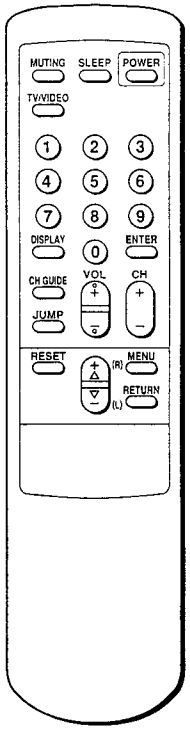
If you connect a monaural VCR, connect the audio output of the VCR to the L (MONO) jack of VIDEO IN on the TV.
The monaural sound will be heard from both speakers.

## Connecting Headphones (except for KV-20TS29/2170RS/21STR2)




**Notes**

- To prevent hearing damage due to sudden or prolonged excessive volume, do not raise the headphones volume too high while listening.
- If your TV is a monaural TV, the monaural sound will be heard from both headphones.

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**To return to the normal screen**
Press MENU.

**Note**

If you set S VIDEO to ON, the TV automatically receives S video signals whenever a VCR with S video is connected.

## Watching a Video with Your S Video-Equipped VCR

**(KV-20TS32 only)**
Use this feature to set S VIDEO to ON or OFF depending on the kind of video equipment you have connected to the TV.
For instructions on connecting video equipment, see p. 24.

**Note**

If the TV is in TV or VIDEO 2 mode, the S VIDEO display appears in black and cannot be selected.
Press TV/VIDEO to change to VIDEO 1 mode.

**1** Press MENU.
*The main menu appears.*

MENU

```
▸VIDEO
 AUDIO
 TIME
 SET UP
 CLOSED CAPTION
Use ≑ RETURN Exit MENU
```

**2** Press △+ or ▽– to select SET UP.

(R) (L)

```
 VIDEO
 AUDIO
 TIME
▸SET UP
 CLOSED CAPTION
Use ≑ RETURN Exit MENU
```

Press RETURN.
*The SET UP menu appears.*

RETURN

```
SET UP
▸CABLE: ON
 AUTO PROGRAM
 CH ERASE/ADD
 CH CAPTION/GUIDE
 S VIDEO: ON
 ↻MENU
Use ≑ RETURN Exit MENU
```

**3** Press △+ or ▽– to select S VIDEO.
Then press RETURN.

(R) (L) RETURN

```
SET UP
 CABLE: ON
 AUTO PROGRAM
 CH ERASE/ADD
 CH CAPTION/GUIDE
 S VIDEO: ON
 ↻MENU
Use ≑ RETURN Exit MENU
```

Press △+ or ▽– to select ON or OFF alternately.

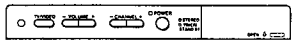
```
SET UP
 CABLE: ON
 AUTO PROGRAM
 CH ERASE/ADD
 CH CAPTION/GUIDE
 S VIDEO: ON
 ↻MENU
Use ≑ RETURN Exit MENU
```

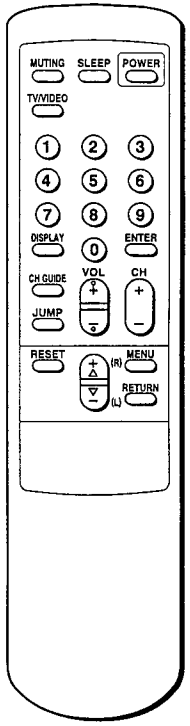
↔

```
SET UP
 CABLE: ON
 AUTO PROGRAM
 CH ERASE/ADD
 CH CAPTION/GUIDE
 S VIDEO: OFF
 ↻MENU
Use ≑ RETURN Exit MENU
```

Press RETURN.
*The setting is completed.*

## 1-7. WATCHING TV PROGRAMS



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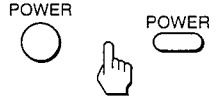
**1** Press POWER on the TV or the Remote Commander to turn the TV on.



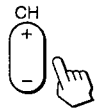

*The TIMER/STAND BY indicator blinks until the picture appears on the screen.*

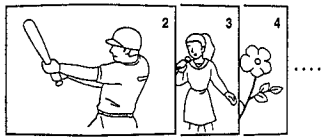
**2** Turn the cable mode on or off to select the type of channel you want to watch, VHF/UHF or cable TV.
(Follow the steps in "Turning the Cable Mode On or Off," p. 17.)

*If "VIDEO" or "S VIDEO" is displayed on the screen, press the TV/VIDEO button on the TV or on the Remote Commander so that the channel number appears.*

**3** Select a channel in one of the following two ways:

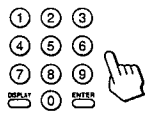
**To scan the preset channels* in numerical sequence**
Press CH +/–.

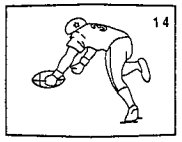


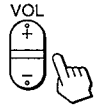

* For more information on presetting channels, see pp. 18 – 22.

**To select a channel directly**
Press 0 – 9 and ENTER.
For example, to select channel 14, press 1, 4 and ENTER.

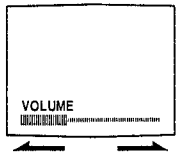



**4** Press VOL +/– to adjust the volume.




*The display will disappear automatically after 3 seconds.*



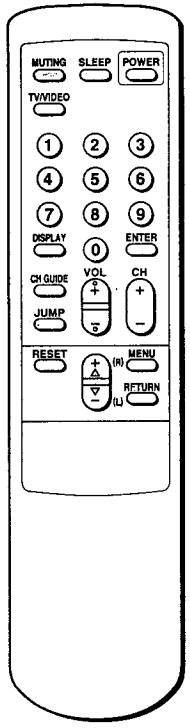

Press + to increase the volume.
Press – to decrease the volume.

**To turn off the TV**
Press POWER on the TV or the Remote Commander again.





## 1-8. USING CONVENIENT FEATURES

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### Muting the Sound — MUTING

Press MUTING
*The display "MUTING" will appear on the screen.*

**To restore the sound**
Press MUTING again, or press VOL +.

### Keeping the Displays On-Screen — DISPLAY

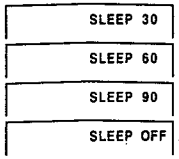
**To display the channel**
Press DISPLAY.
*All the existing displays appear: channel number, channel caption (if set), MTS mode (SAP only) and the current time ("AM" or "PM" disappears after about three seconds).*

**To cancel the display**
Press DISPLAY again.
*The channel display will disappear.*

### Setting the Sleep Timer — SLEEP

The sleep timer turns off the TV automatically after the amount of time you select.

Press SLEEP.
*Each time you press SLEEP, the time increments 30, 60, 90 and OFF mode appear in sequence.*



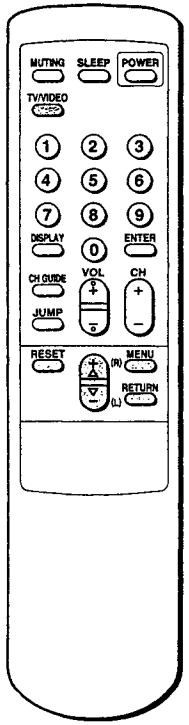

*The SLEEP display appears about one minute before the TV turns off.*

**To cancel the setting**
Press SLEEP until OFF mode appears.
*The "SLEEP OFF" display appears for about three seconds.*
OR
Turn the TV off.
*The sleep timer setting is cancelled.*

### Switching Quickly Between Two Channels — JUMP

Press JUMP once to recall the channel you were watching previously. Press JUMP again to switch back. Use this feature to keep track of two programs alternately.

# 1-9. ADJUSTING PICTURE AND SOUND QUALITY

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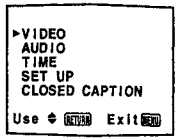
## Adjusting Picture Quality

You can adjust the picture for each input mode (TV, VIDEO 1, VIDEO 2) by pressing TV/VIDEO to select the input mode before making the adjustments. These adjustments are retained in memory even when you turn off the TV until you change the adjustments again.

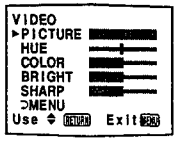
**1** Press MENU.
*The main menu appears, and the cursor points to VIDEO.*

MENU

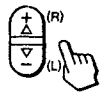


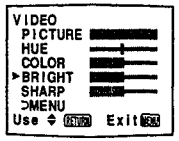

**2** Press RETURN.
*The VIDEO menu appears.*

RETURN




**3** Press △+ or ▽– to select the item you want to adjust.
For example, to adjust the picture brightness, select BRIGHT.

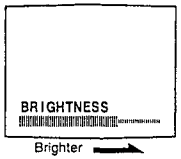



Press RETURN.
*The adjustment bar appears.*

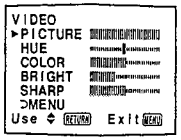
RETURN

**4** Press △+ or ▽– to make the adjustment.



Press RETURN.
*The new setting appears in the VIDEO menu.*

RETURN




**To adjust other items**
Repeat steps 3 – 4.

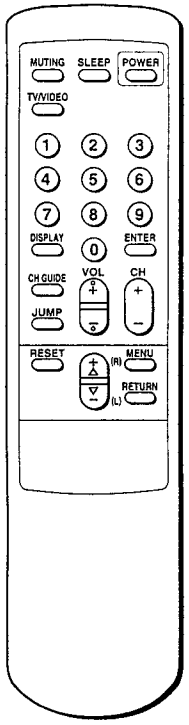
| | Press ▽– to: | Press △+ to: |
|---|---|---|
| PICTURE | decrease picture contrast with soft color | increase picture contrast with vivid color |
| HUE | make skin tones become purplish | make skin tones become greenish |
| COLOR | decrease color intensity | increase color intensity |
| BRIGHTNESS | darken the picture | brighten the picture |
| SHARPNESS | soften the picture | sharpen the picture |

**To return to the normal screen**
Press MENU.

**To restore the factory (mid-level) setting**
Go to the VIDEO menu and press RESET. All the settings except for PICTURE will be restored to the mid-level setting.

**Note**

The menus and adjustment bars will disappear automatically after 90 seconds if you do not press any other buttons during that time.

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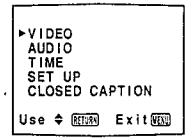
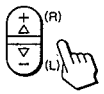
## Receiving Multichannel TV Sound Programs — MTS

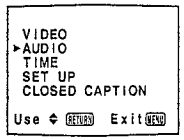
**1** Press MENU.
*The main menu appears.*

MENU



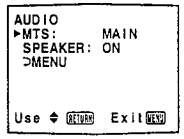

**2** Press △+ or ▽– to select AUDIO.




Press RETURN.
*The AUDIO menu appears, and the cursor points to MTS.*

RETURN

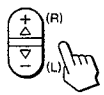


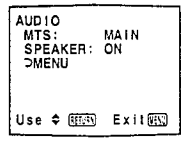

**3** Press RETURN.

RETURN

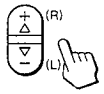
**4** Press △+ or ▽– to select the mode you want.
*Each time you press △+ or ▽–, "MAIN", "SAP" and "MONO" appear in sequence.*

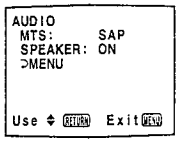
Select the MAIN mode to listen to STEREO sound.
*The STEREO indicator on the TV lights up whenever a stereo broadcast is received.*




Select the SAP mode to listen to Second Audio Programs.

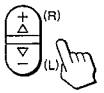


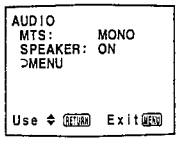




**Note**

During SAP mode, the sound of non-SAP programs will be muted.

Select the MONO mode to eliminate excessive noise during stereo broadcasts, caused by a weak signal.

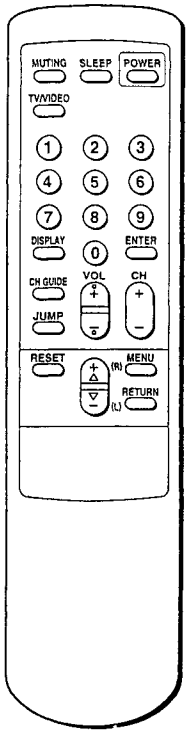



Press RETURN
*The mode is selected.*

RETURN

**To return to the normal screen**
Press MENU.

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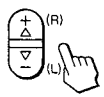
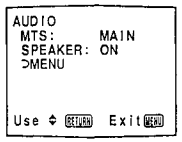
## Turning the Speaker On or Off

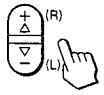
**1-2** (Follow steps 1-2 in "Receiving Multichannel TV Sound Programs — MTS," p. 32.)

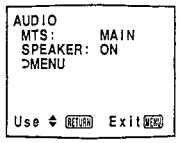
**3** Press △+ or ▽– to select SPEAKER.
Then press RETURN.

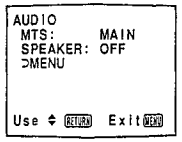




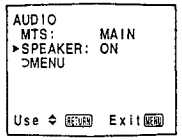

**4** Press △+ or ▽– to select ON or OFF alternately.

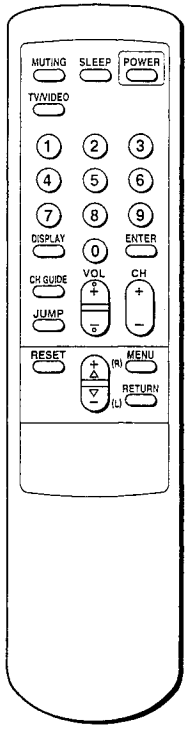





Press RETURN.
*The setting is completed.*

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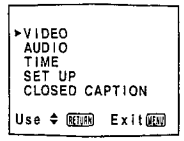
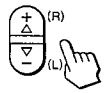
**To return to the normal screen**
Press MENU.

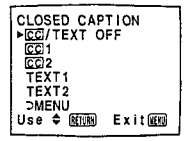
## 1-10. USING CLOSED CAPTION (U.S.A. models only)

**1** Press MENU.
*The main menu appears.*

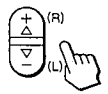



**2** Press △+ or ▽– to select CLOSED CAPTION.
Then press RETURN.
*The CLOSED CAPTION screen appears.*

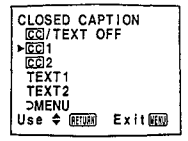




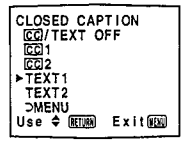

**3** Press △+ or ▽– to select closed caption mode.



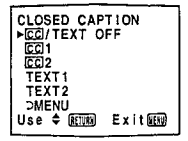

Select CC1 or CC2 to view Captions.
A Caption is a printed version of the dialogue or sound effects of a program. (The mode should be set to CC1 for most programs.)




Select TEXT1 or TEXT2 to view Text.
Text is information that is presented using the half to full television screen.
It is usually not related to the program.

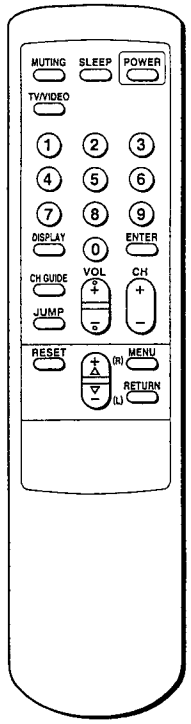



Select CC/TEXT OFF if you do not want to use the CLOSED CAPTION mode.




Press RETURN.
*The Setting is completed.*

# 1-11. USING THE TIMER-ACTIVATED FUNCTIONS

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## Setting the Clock – CURRENT TIME SET

Follow these instructions to set the current time. The correct time must be set in order to use the other timer-activated functions (ON/OFF TIMER, CHANNEL BLOCK).

EXAMPLE: Set the time to 3:15 PM, Monday.

**1** Press MENU.
*The main menu appears.*

MENU

```
▸VIDEO
 AUDIO
 TIME
 SET UP
 CLOSED CAPTION

Use ≑ RETURN  Exit MENU
```

**2** Press △+ or ▽– to select TIME.

(R) (L)

```
 VIDEO
 AUDIO
▸TIME
 SET UP
 CLOSED CAPTION

Use ≑ RETURN  Exit MENU
```

Press RETURN.
*The TIME menu appears, and the cursor points to CURRENT TIME SET.*

RETURN

```
TIME
▸CURRENT TIME SET
 ON/OFF TIMER
 CHANNEL BLOCK
 >MENU

 ___ --:-- AM
Use ≑ RETURN  Exit MENU
```

**3** Press RETURN.
*The CURRENT TIME SET screen appears.*

RETURN

```
CURRENT TIME SET

▸___ --:-- AM
 >MENU


Use ≑ RETURN  Exit MENU
```

**4** Press RETURN again.
*"Set the day." appears on the screen.*

RETURN

```
CURRENT TIME SET

  SUN 12:00 AM
 >MENU

Set the day.
Use ≑ RETURN  Exit MENU
```

**5** Press △+ or ▽– to set the day.
*Each time you press △+ or ▽–, the day changes consecutively.*

(R) (L)

Press RETURN.
*"Set the time." appears on the screen.*

RETURN

```
CURRENT TIME SET

  MON 12:00 AM
 >MENU


Set the time.
Use ≑ RETURN  Exit MENU
```

**6** Press △+ or ▽– to set the hour.
*Each time you press △+ or ▽–, the hour changes starting with "12:00 AM."*

(R) (L)

Press RETURN.

RETURN

```
CURRENT TIME SET

  MON 3:00 PM
 >MENU


Set the time.
Use ≑ RETURN  Exit MENU
```

**7** Press △+ or ▽– to set the minutes.
*Each time you press △+ or ▽–, the minutes change in sequence.*

(R) (L)

```
CURRENT TIME SET

  MON 3:15 PM
 >MENU


Set the time.
Use ≑ RETURN  Exit MENU
```

Press RETURN.
*The setting is completed, and the clock starts.*

RETURN

```
CURRENT TIME SET

▸MON 3:15 PM
 >MENU


Use ≑ RETURN  Exit MENU
```

**To reset the time**
Press RESET while in the CURRENT TIME screen, and repeat steps 4–7.

**To display the time**
Press DISPLAY.

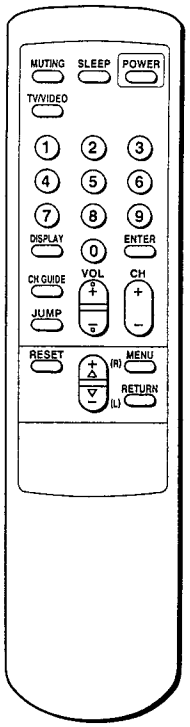
**To return to the normal screen**
Press MENU.

### Notes

- The internal clock of this TV operates on a 12-hour cycle. If a 24-hour cycle number (for instance, 13:00) is entered, it will be cleared when you press RETURN.

  12:00 AM stands for midnight.
  12:00 PM stands for noon.

- All the settings including CURRENT TIME SET will be erased if you unplug the TV or a power failure occurs. Reset the current time by following steps 1–7.

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## Setting the ON/OFF TIMER

With this function you can set your favorite program to appear on the screen at the time that you set.

EXAMPLE: Set the timer to turn on the TV every Monday through Friday at 3:15 PM for 2 hours, on channel 21.

**1** Press MENU.
*The main menu appears.*

MENU

```
▸VIDEO
 AUDIO
 TIME
 SET UP
 CLOSED CAPTION
Use ≑ RETURN Exit MENU
```

**2** Press △+ or ▽– to select TIME.
Then press RETURN.
*The TIME menu appears.*

(R) (L) RETURN

```
TIME
▸CURRENT TIME SET
 ON/OFF TIMER
 CHANNEL BLOCK
 ⊃MENU

 MON  3:15 PM
Use ≑ RETURN Exit MENU
```

**3** Press △+ or ▽– to select ON/OFF TIMER.
Then press RETURN.
*The ON/OFF TIMER screen appears.*

(R) (L) RETURN

```
ON/OFF TIMER

▸EVERY SUN-SAT
 12:00AM -h CH---
 ⊃MENU

Use ≑ RETURN Exit MENU
```

**Note**

If the ON/OFF TIMER display appears in black, the current time has not been set and you cannot select ON/OFF TIMER. To set the clock, see "Setting the Clock – CURRENT TIME SET," pp. 36-37.

**4** Press RETURN again.
*"Set the day." appears on the screen.*

RETURN

```
ON/OFF TIMER

  EVERY SUN-SAT
  12:00AM -h CH---
  ⊃MENU

Set the day.
Use ≑ RETURN Exit MENU
```

**5** Press △+ or ▽– to set the day.
*Each time you press △+ or ▽–, the days of the week change as shown in Fig. 1.*
Then press RETURN.
*"Set the time." appears on the screen.*

(R) (L) RETURN

```
ON/OFF TIMER

  EVERY MON-FRY
  12:00AM -h CH---
  ⊃MENU

Set the time.
Use ≑ RETURN Exit MENU
```

**6** Press △+ or ▽– to set the hour that you want the TIMER to start.
*Each time you press △+ or ▽–, the hour changes in sequence.*
Then press RETURN.

(R) (L) RETURN

```
ON/OFF TIMER

  EVERY MON-FRY
   3:00PM -h CH---
  ⊃MENU

Set the time.
Use ≑ RETURN Exit MENU
```

**7** Press △+ or ▽– to set the minutes.
*Each time you press △+ or ▽–, the minutes change in sequence.*
Then press RETURN.
*"Set the duration." appears on the screen.*

(R) (L) RETURN

```
ON/OFF TIMER

  EVERY MON-FRY
   3:15PM -h CH---
  ⊃MENU

Set the duration.
Use ≑ RETURN Exit MENU
```

**8** Press △+ or ▽– to set the duration of time.
*Each time you press △+ or ▽–, the duration changes from "1" to "6" in sequence.*
Then press RETURN.
*"Select the channel" appears on the screen.*

(R) (L) RETURN

```
ON/OFF TIMER

  EVERY MON-FRY
   3:15PM 2h CH---
  ⊃MENU

Select the channel
Use ≑ RETURN Exit MENU
```

**9** Press △+ or ▽– to set the channel that you want the TV to tune in.
*Each time you press △+ or ▽–, the channel number changes from 1 to 125 in sequence.*

(R) (L)

```
ON/OFF TIMER

  EVERY MON-FRY
   3:15PM 2h CH 21
  ⊃MENU

Select the channel
Use ≑ RETURN Exit MENU
```

Press RETURN.
*The setting is completed, and the TIMER indicator on the front of the TV lights up.*

RETURN

```
ON/OFF TIMER

▸EVERY MON-FRY
  3:15PM 2h CH 21
 ⊃MENU

Use ≑ RETURN Exit MENU
```

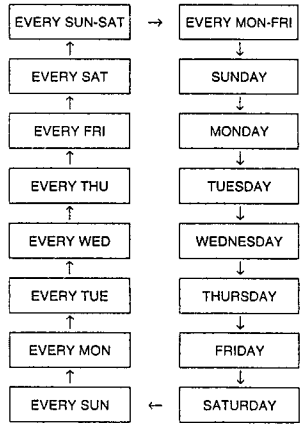
**To clear the ON/OFF TIMER setting**
Press RESET while in the ON/OFF TIMER screen.

**To return to the normal screen**
Press MENU.

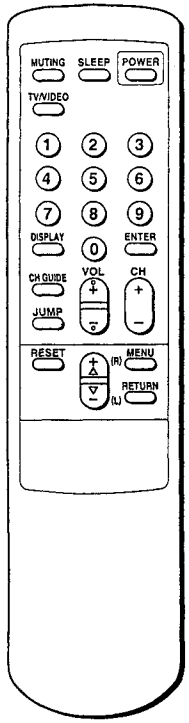
**Notes**

- While the TIMER is set, the TIMER indicator on the TV is on.
- One minute before the timer goes off, the "TV will turn off" display will appear on the screen.
- If you have not set the clock correctly, the ON/OFF TIMER will not operate at the proper time. To set the clock, see "Setting the Clock-CURRENT TIME SET," pp. 36-37.
- All the settings including ON/OFF TIMER will be erased if you unplug the TV or a power failure occurs. Reset the TIMER by following steps 1-9.

**Fig. 1**
**Selecting the day(s) of the week**
When you press △+, the days of the week appear in the following order.




(▽–: reverse order)

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## Setting CHANNEL BLOCK

Use this function to block a channel from appearing on the screen during the time you specify. You can use this function to prevent children from watching undesirable programs.

EXAMPLE: Set CHANNEL BLOCK every Sunday at 8:45 PM for one hour, on channel 38.

**1** Press MENU.
*The main menu appears.*

MENU

```
►VIDEO
 AUDIO
 TIME
 SET UP
 CLOSED CAPTION

Use ≑ RETURN  Exit MENU
```

**2** Press △+ or ▽– to select TIME.
Then press RETURN.
*The TIME menu appears.*

(R) (L) RETURN

```
TIME
►CURRENT TIME SET
 ON/OFF TIMER
 CHANNEL BLOCK
 >MENU

 MON  3:15 PM
Use ≑ RETURN  Exit MENU
```

**3** Press △+ or ▽– to select CHANNEL BLOCK.
Then press RETURN.
*The CHANNEL BLOCK screen appears.*

(R) (L) RETURN

```
CHANNEL BLOCK

►EVERY SUN-SAT
 12:00AM –h CH---
 >MENU

Use ≑ RETURN  Exit MENU
```

**Note**

If the CHANNEL BLOCK display appears in black, the current time has not been set and you cannot select CHANNEL BLOCK. To set the clock, see "Setting the Clock – CURRENT TIME SET," pp. 36-37.

**4** Press RETURN again.
*"Set the day." appears on the screen.*

RETURN

```
CHANNEL BLOCK

 EVERY SUN-SAT
 12:00AM –h CH---
 >MENU

Set the day.
Use ≑ RETURN  Exit MENU
```

**5** Press △+ or ▽– to set the day.
*Each time you press △+ or ▽–, the days of the week change as shown in Fig. 1. (See p.39.)*
Then press RETURN.
*"Set the time." appears on the screen.*

(R) (L) RETURN

```
CHANNEL BLOCK

 SUNDAY
 12:00AM –h CH---
 >MENU

Set the time.
Use ≑ RETURN  Exit MENU
```

**6** Press △+ or ▽– to set the hour.
*Each time you press △+ or ▽–, the hour changes in sequence.*
Then press RETURN.

(R) (L) RETURN

```
CHANNEL BLOCK

 SUNDAY
 8:00PM –h CH---
 >MENU

Set the time.
Use ≑ RETURN  Exit MENU
```

**7** Press △+ or ▽– to set the minutes.
*Each time you press △+ or ▽–, the minutes change in sequence.*
Then press RETURN.
*"Set the duration." appears on the screen.*

(R) (L) RETURN

```
CHANNEL BLOCK

 SUNDAY
 8:45PM –h CH---
 >MENU

Set the duration.
Use ≑ RETURN  Exit MENU
```

**8** Press △+ or ▽– to set the duration of time that you want the TV remain blocked.
*Each time you press △+ or ▽–, the duration changes from "1" to "6" in sequence.*
Then press RETURN.
*"Select the channel" appears on the screen.*

(R) (L) RETURN

```
CHANNEL BLOCK

 SUNDAY
 8:45PM 1h CH---
 >MENU

Select the channel
Use ≑ RETURN  Exit MENU
```

**9** Press △+ or ▽– to set the channel that you want to block.
*Each time you press △+ or ▽–, the channel number changes from 1 to 125 in sequence.*

(R) (L)

```
CHANNEL BLOCK

 SUNDAY
 8:45PM 1h CH 38
 >MENU

Select the channel
Use ≑ RETURN  Exit MENU
```

Press RETURN.
*The setting is completed.*

RETURN

```
CHANNEL BLOCK

►SUNDAY
 8:45PM 1h CH 38
 >MENU

Use ≑ RETURN  Exit MENU
```

If you select a channel which has been blocked, the message of "BLOCKED" appears.

```
BLOCKED
```

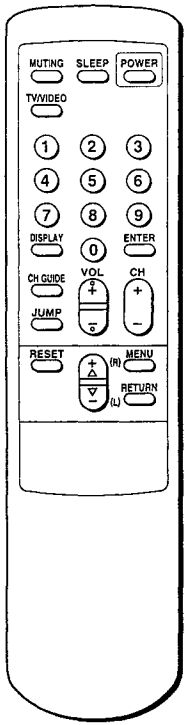
**To clear the BLOCK setting**
Press RESET while in the CHANNEL BLOCK screen.

**To return to the normal screen**
Press MENU.

**Notes**

- If you set a new CHANNEL BLOCK by following steps 1-9, the original setting will be erased.
- If you have not set the clock correctly, CHANNEL BLOCK will not operate at the proper time. To set the current time, see "Setting the Clock – CURRENT TIME SET," pp. 36-37.

# 1-12. CUSTOMIZING THE SCREEN DISPLAY

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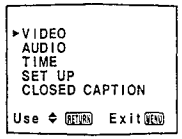
## Setting Channel Captions – CH CAPTION

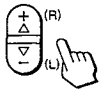
Use this feature to caption up to 12 channel number displays with the matching channel call letters.

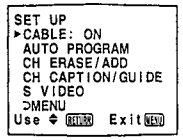
EXAMPLE: Caption channel 20 with ESPN at the caption position number 4.

**1** Press MENU.
*The main menu appears.*

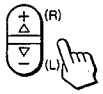


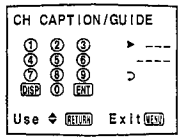

**2** Press △+ or ▽– to select SET UP.
Then press RETURN.
*The SET UP menu appears.*






**3** Press △+ or ▽– to select CH CAPTION/GUIDE.
Then press RETURN.
*The CH CAPTION/GUIDE screen appears.*

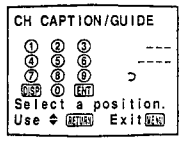




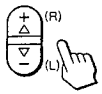

**Note**

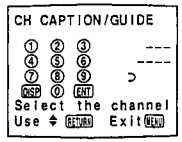
If the CH CAPTION/GUIDE display appears in black, the TV is in video mode and you cannot select CH CAPTION/GUIDE. Press TV/VIDEO to change to TV mode.

**4** Press RETURN again.
*"Select a position." appears on the screen.*

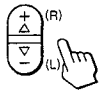


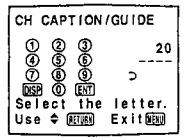

**5** Press △+ or ▽– to select a caption position number.
*Each time you press △+ or ▽–, the caption position number is marked in sequence.*
Then press RETURN.
*"Select the channel" appears on the screen.*



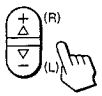


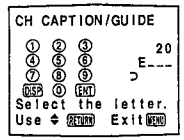

**6** Press △+ or ▽– to select the channel you want to caption.
*Each time you press △+ or ▽–, the channel number changes from 1 to 125.*
Then press RETURN.
*"Select the letter." appears on the screen.*



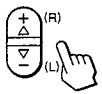


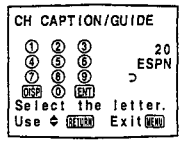

**7** Press △+ or ▽– to select the first letter.
*Each time you press △+ or ▽–, "0-9," "A-Z," "&," "/," "–," and "_(blank space)" appear in sequence.*
Then press RETURN.



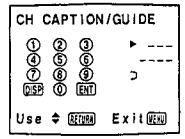



**8** Repeat step 7 to select each remaining letter.
(For a 3-letter caption, leave a space by pressing RETURN only.)





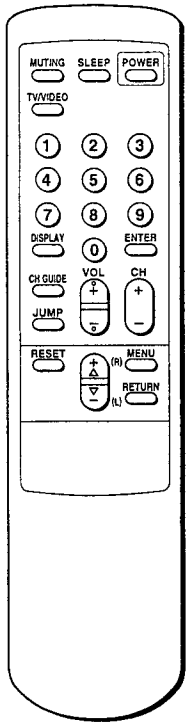

**9** Press RETURN.
*The setting is completed.*




**To caption other channels**
Repeat steps 4-9.

**To erase unneeded captions**
Call the caption setting screen by following steps 1 - 5, and press RESET.

**To return to the normal screen**
Press MENU.



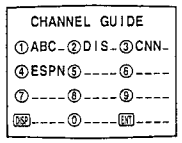

RM-Y116

## Viewing the Captioned Channels – CHANNEL GUIDE

Use this feature to display the captions you set, and to select a channel directory for viewing.

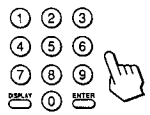
**1** Press CH GUIDE.
*A directory appears, corresponding to the directory keys on the Remote Commander.*

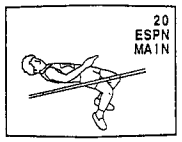
CH GUIDE



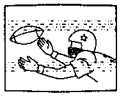
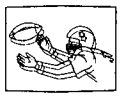

**To cancel the CHANNEL GUIDE screen**
Press CH GUIDE again.

**2** Press the directory key of the channel you want to watch.



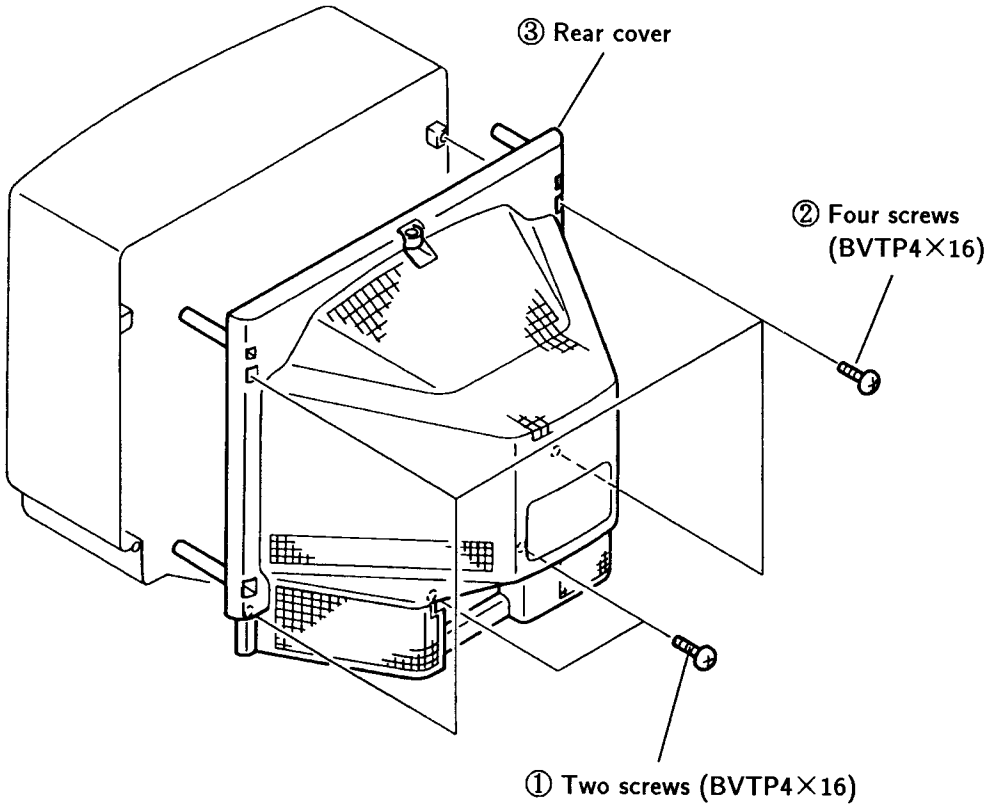

# 1-13. TROUBLESHOOTING

| Symptom | Possible causes and remedies |
|---|---|
| Poor or no picture (screen not lit), good sound | • Adjust PICTURE.<br>• Adjust BRIGHTNESS.<br>• Check antenna/cable connections. |
| Good picture, no sound | • Press VOLUME + on the TV or VOL + on the Remote Commander.<br>• Press MUTING on the Remote Commander.<br>• Check that the MTS setting is set correctly.<br>• Check that the TV/VIDEO button is set correctly.<br>• Check that "SPEAKER ON" is set. |
| Good picture, no sound from the cordless headphones | • Is the battery used up?<br>• Is the cordless headphones power turned on?<br>• Adjust the cordless headphones volume control.<br>• Make sure HEADPHONES is set to ON. |
| Good picture, noisy sound from the cordless headphones | • Is the battery used up?<br>• Remove obstacles between the infrared emitter and the cordless headphones.<br>• Is the infrared detector covered by your hands, hair, etc?<br>• Adjust the direction and the position of the infrared emitter. |
| No picture (screen not lit), no sound | • Is POWER switched on?<br>• Plug the unit into a wall outlet.<br>• Check that the TV/VIDEO button is set correctly.<br>• Make sure S VIDEO is set to on. |
| No color | • Is it a color program?<br>• Adjust COLOR. |
| Snow and noise only | • Is it an active or the correct channel?<br>• Check the CABLE setting.<br>• Check antenna/cable connections. |
|  Dotted lines or stripes | This is often caused by local interference. (e.g. cars, neon signs, hairdryers etc.) Adjust the antenna for minimum interference. |
|  Double images or ghosts | Reflections from nearby mountains or buildings often cause this problem. A highly directional outdoor antenna or a CATV cable may improve the picture. |
| Try another channel. It could be station trouble. | |

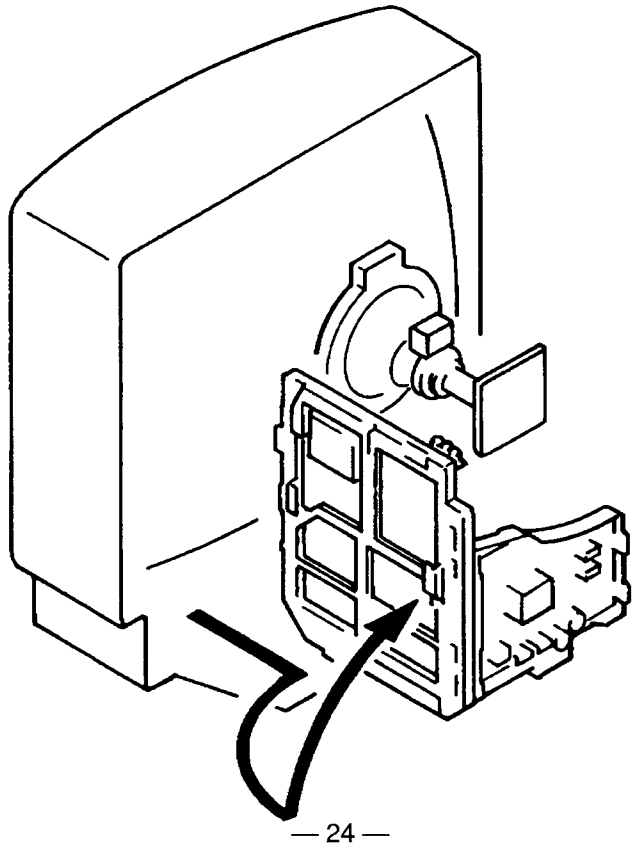
If the problem persists, contact your nearest service facility.

# SECTION 2
# DISASSEMBLY

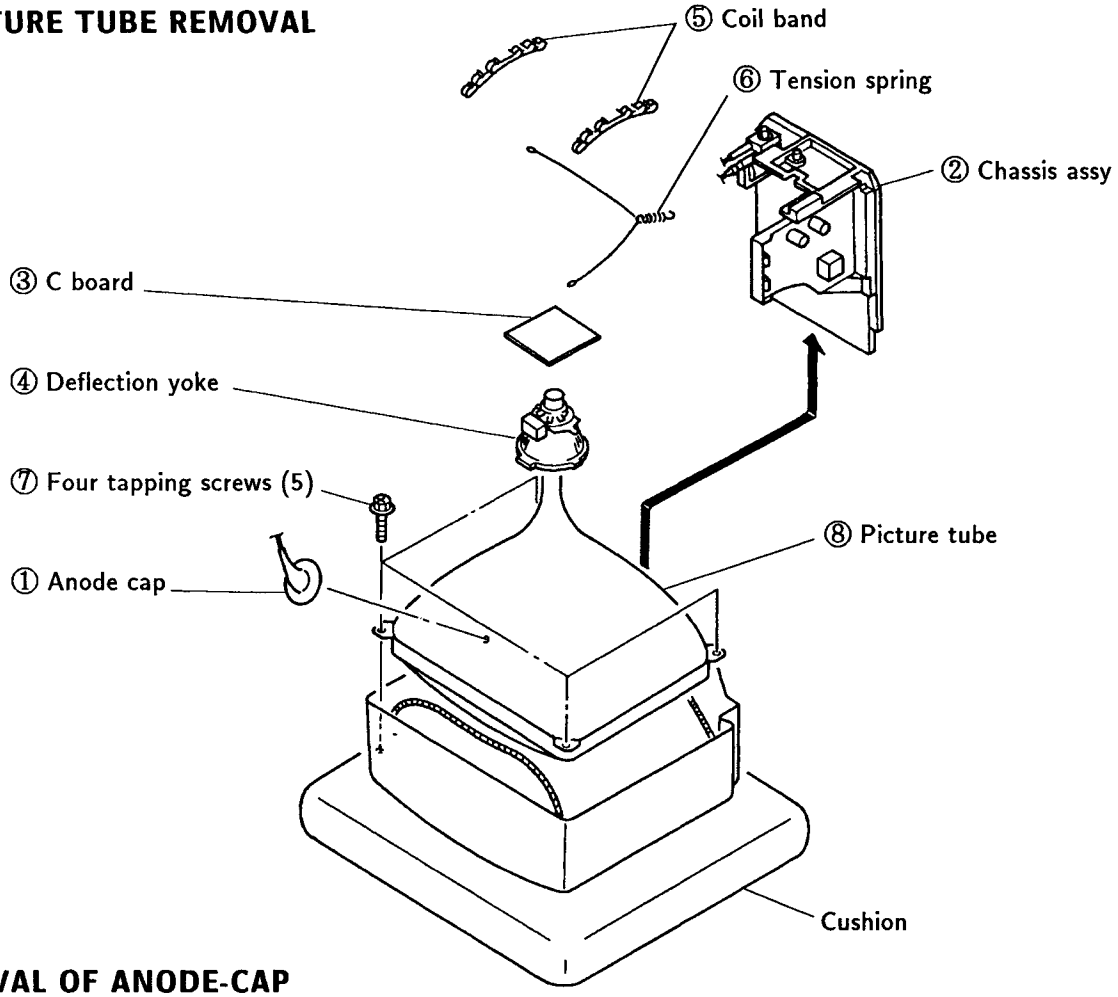
## 2-1. REAR COVER REMOVAL




## 2-2. SERVICE POSITION



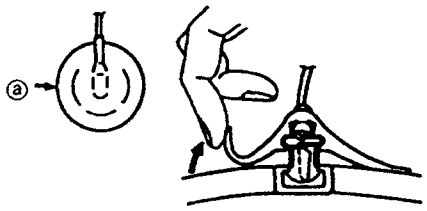
## 2-3. PICTURE TUBE REMOVAL



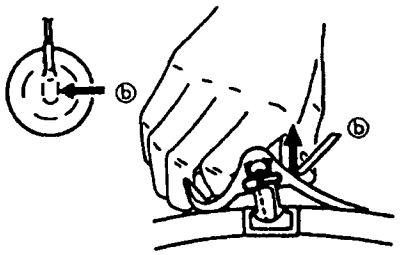

### · REMOVAL OF ANODE-CAP

NOTE : Short circuit the anode of the picture tube and the anode cap to the metal chassis, CRT chield or carbon painted on the CRT, after removing the anode.

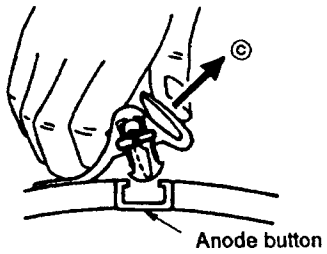
### · REMOVING PROCEDURES




① Turn up one side of the rubber cap in the direction indicated by the arrow ⓐ.




② Using a thumb pull up the rubber cap firmly in the direction indicated by the arrow ⓑ.



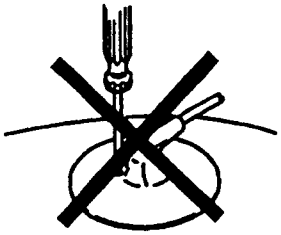

③ When one side of the rubber cap is separated from the anode button, the anode-cap can be removed by turning up the rubber cap and pulling up it in the direction of the arrow ⓒ.

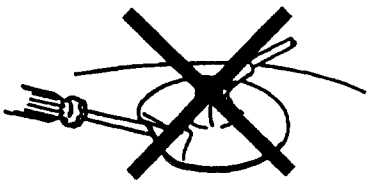
### · HOW TO HANDLE AN ANODE-CAP

① Don't hurt the surface of anode-caps with sharp shaped material!

② Don't press the rubber hardly not to hurt inside of anode-caps!
A material fitting called as shatter-hook terminal is built in the rubber.

③ Don't turn the foot of rubber over hardly!
The shatter-hook terminal will stick out or hurt the rubber.





# SECTION 3
# SET-UP ADJUSTMENTS

- The following adjustments should be made when a complete realignment is required or a new picture tube is installed.
- These adjustments should be performed with rated power supply voltage unless otherwise noted.

The controls and switch should be set as follows unless otherwise noted :

PICTURE control ..... normal
BRIGHTNESS control ..... normal

Perform the adjustments in order as follows:

1. Beam Landing
2. Convergence
3. Focus
4. Screen (G 2) and White Balance

**Note**: Test Equipment Required.

1. Color bar Pattern Generator
2. Degausser
3. DC Power Supply
4. Digital multimeter

**Preparation:**

- Feed in the white pattern signal.
- Before starting, degauss the entire screen.

## 3-1. BEAM LANDING

1. Input a raster signal with the pattern generator.
2. Loosen the deflection yoke mounting screw, and set the purity control to the center as shown in Fig.2.
3. Turn the raster signal of the pattern generator to green.
4. Move the deflection yoke backward, and adjust with the purity control so that green is in the center and red and blue are at the sides evenly. (Fig.3)
5. Move the deflection yoke forward, and adjust so that the entire screen becomes green. (Fig.1)
6. Switch over the raster signal to red and blue and confirm the condition.
7. When the position of the deflection yoke is determined, tighten it with the deflection yoke mounting screw.
8. When landing at the corner is not right, adjust by using the disk magnets. (Fig.4)

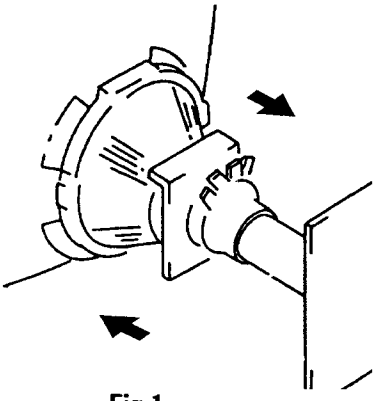


Fig.1

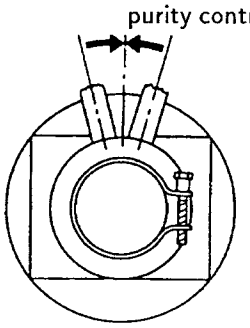



Fig.2

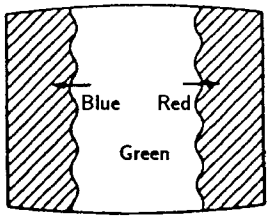



Fig.3

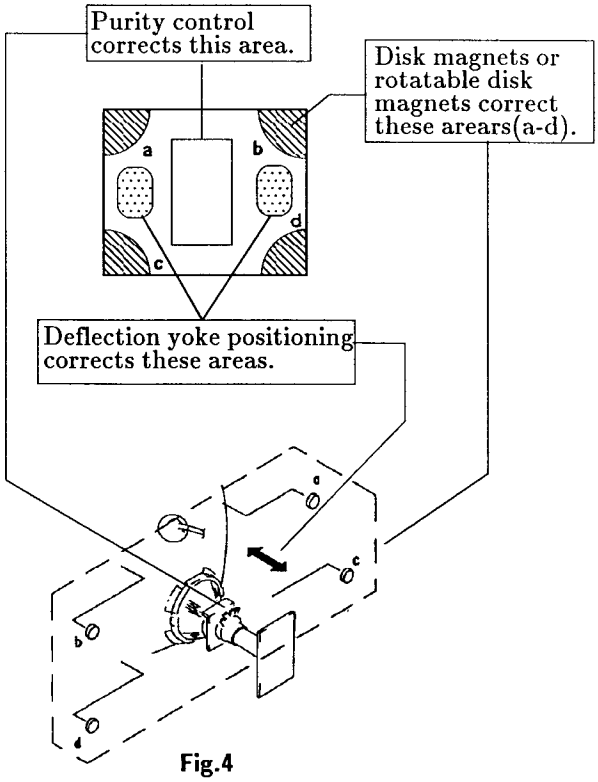



Fig.4

## 3-2. CONVERGENCE

**Preparation:**

- Before starting, perform FOCUS, H.SIZE, V.LIN and V.SIZE adjustments.
- Set BRIGHTNESS control to minimum.
- Feed in dot pattern.

**(1) Horizontal and Vertical Static Convergence**

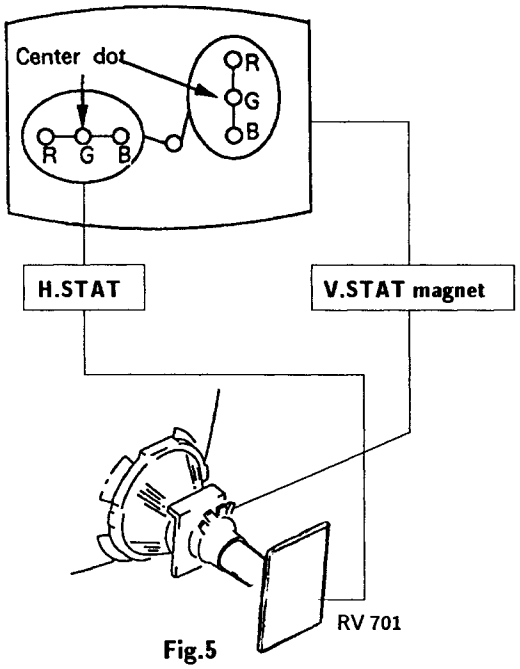
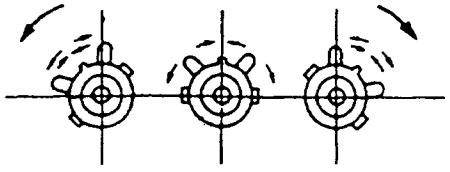


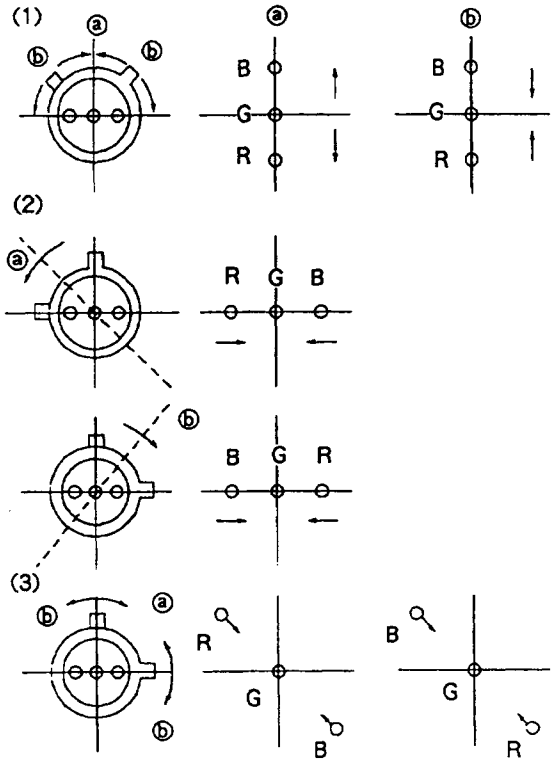

Fig.5

1. Adjust H.STAT VR to converge red, green and blue dots the in center of the screen.(Horizontal movement)
2. Adjust V. STAT magnet to converge red, green and blue dots in the center of the screen. (Vertical movement)
3. If the red, green and blue dots do not converge on the center of screen with H.STAT VR, perform horizontal convergence adjustment using H.STAT VR and V.STAT magnet as shown below. (In this case, H.STAT VR and V.STAT magnet effect each other.)

- Tilt the V.STAT magnet and adjust static convergence to open or close the V.STAT magnet.



4.When the V.STAT magnet is moved in the direction of arrow ⓐ and ⓑ, red, green and blue dots move as shown below.




If the blue dot does not converge with red and green dots, perform following steps.

Move BMC magnet (a) to correct insufficient H.static convergence.

Rotate BMC magnet (b) to correct insufficient V.static convergence.

In either case, repeat Beam Landing Adjustment.

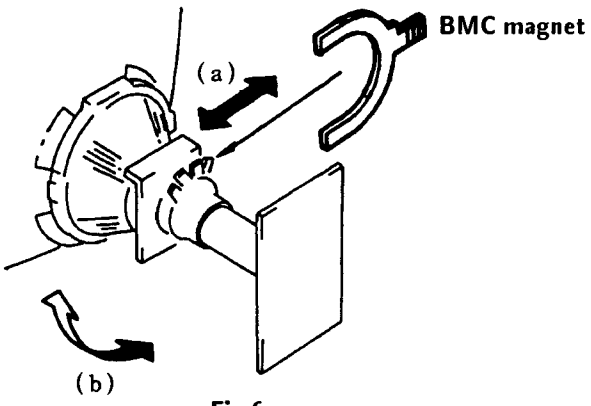



Fig.6

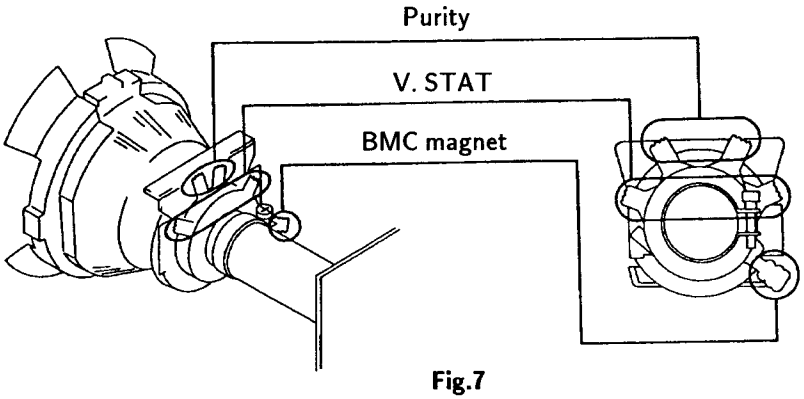



Fig.7

**(2)Dynamic Convergence Adjustment**

**Preparation:**

- Before starting perform Horizontal and Vertical static convergence Adjustment.

1. Slightly loosen deflection yoke screw.
2. Remove deflection yoke spacers.
3. Move the deflection yoke for best convergence as shown below.
4. Tighten the deflection yoke screw.
5. Install the deflection yoke spacers.

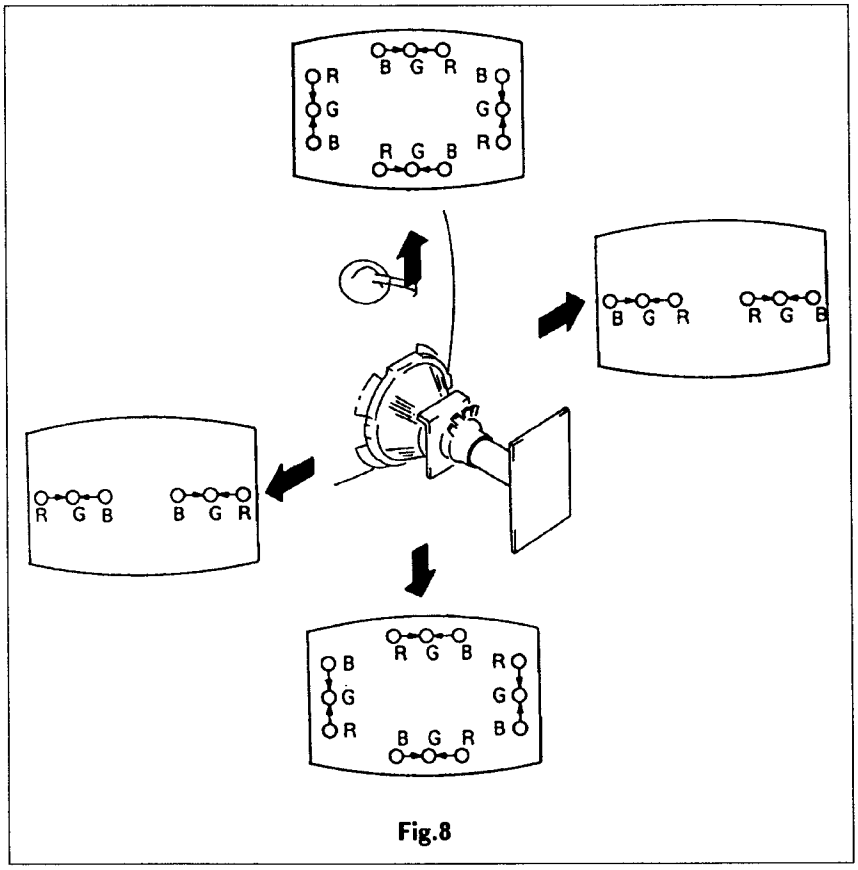



Fig.8

**(3) Screen-corner Convergence**

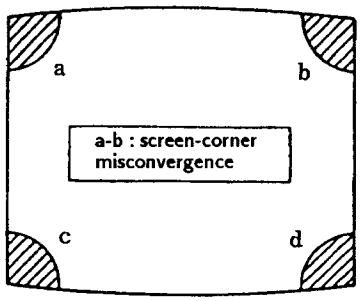
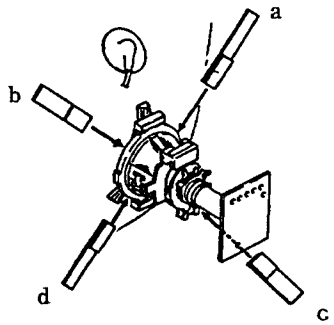



Fig.9

Affix a Permalloy ass'y corresponding to the misconverged areas




Permalloy assembly

## 3-3. FOCUS

Adjust FOCUS control for best picture.

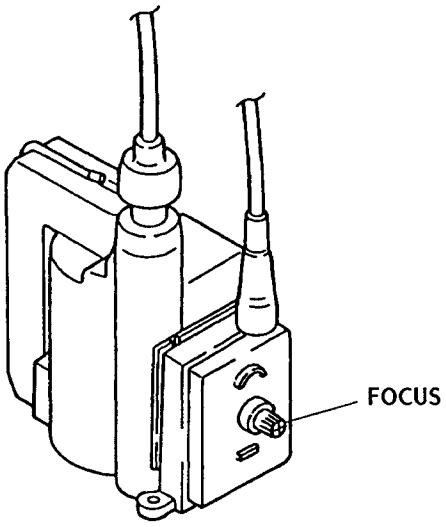



Fig.10

## 3-4. SCREEN(G 2)

1. Input a dots pattarn.
2. Set the PIC, BRT controls at minimum and COLOR control at normal.
3. Adjust BKG VRs so that voltages on the red, green and blue cathodes are 170 V dc with an oscilloscope as shown in Fig.11.
4. Observe the screen and adjust SCREEN (G 2)RV 702 to obtain the faintly visible background of dot signal.

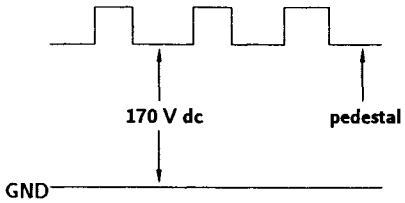


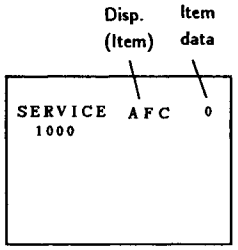

Fig.11

## 3-5. METHOD OF SETTING THE SERVICE ADJUSTMENT MODE

SERVICE MODE PROCEDURE

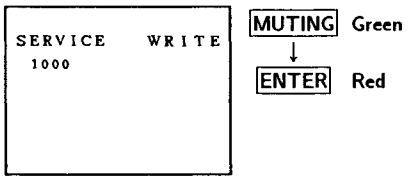
1. Standby mode.(Power off)
2. DISPLAY → 5 → VOL (+) → POWER on the Remote Commander. (Press each button within a second.)

SERVICE ADJUSTMENT MODE IN




3. The CRT displays the item Being adjusted.
4. Press 1 or 4 on the Remote Commander to select the item.
5. Press 3 or 6 on the Remote Commander to change the data.
6. Press MUTING then ENTER to write into memory.

SERVICE ADJUSTMENT MODE MEMORY




7. Turn set off and on to exit.

## 3-6. WHITE BALANCE ADJUSTMENTS

1. Input an entire white signal.
2. Set to service adjustment mode.
3. Set the PICTURE and BRIGHT to minimum.
4. Adjust with SBRT if necessary.
5. Select G CUT and B CUT with 1 and 4.
6. Adjust with 3 and 6 for the best white balance.
7. Set the PICTURE and BRIGHT to maximum.
8. Select GAMP and BAMP with 1 and 4.
9. Adjust with 3 and 6 for the best white balance.
10. Write into the memory by pressing MUTING then ENTER.

# SECTION 4
# SAFETY RELATED ADJUSTMENTS

## A BOARD

### ⊠ R537 CONFIRMATION METHOD (HV HOLD-DOWN CONFIRMATION) AND READJUSTMENTS

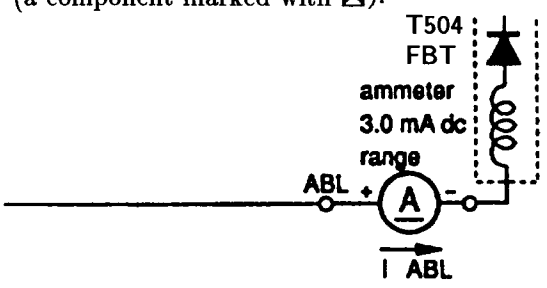
The following adjustments should always be performed when replacing the following components (marked with ◪ on the schematic diagram).
IC602, D511, C523, C524, R534, R535, R537, R549, R565, R637, PM501, T504, DY

①

1. Preparation before confirmation
   1) Turn the POWER switch ON, and receive entirely white signal and set the PICTURE and BRIGHT controls to maximum.
   2) Confirm that the voltage of the check terminal of TP85 is more than 100VDC when the set is operating normaly with 120.0±2.0VAC supply.

2. Hold-down operation confirmation (HV)
   1) Connect the currentmeter between the 7th pin of FBT (T504)and the land of it with connect polarity.
   2) Receive White Signal and adjust the ABL current to follows with the PICTURE and the BRIGHT controls.
      1450 ± 100μA
   3) Connect the Digital Voltmeter to pin8 of PM501 then read the voltage as A.
   4) Connect the Digital Voltmeter and DC power Supply via 1SS 119 to TP-85.
   5) Increase the DC power voltage gradually until the Picture just blanks out.
   6) Read the digital volymeter indication.
   7) Turn DC power Source off immediatery.
      STANDARD
      Less or equal to A + 16.5 VDC
   8) Receive Dot Signal and adjust the ABL current to follows, with the PIX and the BRT controls.
      150 ± 100 μA
   9) Repeat steps from (3) to (7).
      STANDARD
      Less or equal to A + 16.5 VDC

3. Hold-down readjustment
   When step 2 is not satisfied, readjustment should be performed by altering the resistance value of R537 (a component marked with ⊠).




## A BOARD

### ⊠ R511 CONFIRMATION METHOD (B+ HOLD-DOWN CONFIRMATION) AND READJUSTMENTS

The following adjustments should always be performed when replacing the following components (marked with ◪ on the schematic diagram).
IC602, C524, R511, R534, R549, R565, R637, PM501

②

1. Hold-Down Operation Voltage (B+)
   1) Connect the currentmeter between the 7th pin of FBT (T504)and the land of it with connect polarity.
   2) Receive White Signal and adjust the ABL current to follows with the PICTURE and the BRIGHT controls.
      1450 ± 100μA
   3) Connect the Digital Voltmeter and DC power Supply via 1SS 119 to pin8 of PM501.
   4) Increase the DC power voltage gradually until the Picture just blanks out.
   5) Read the digital voltmeter indication.
   6) Turn DC power Source off immediatery.
      STANDARD
      Less or equal to 130.0 VDC
   7) Receive Dot Signal and adjust the ABL current to follows, with the PICTURE and the BRIGHT controls.
      150 ± 100 μA
   8) Repeat steps from (4) to (6).
      STANDARD
      Less or equal to 132.5 VDC

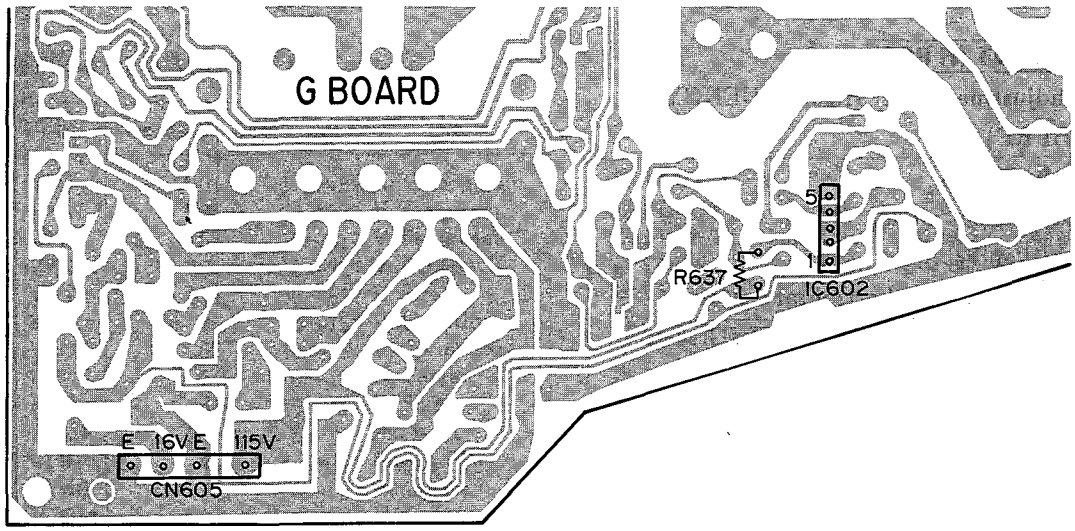
2. Hold-down readjustment
   When step 2 is not satisfied, readjustment should be performed by altering the resistance value of R511 (a component marked with ⊠).

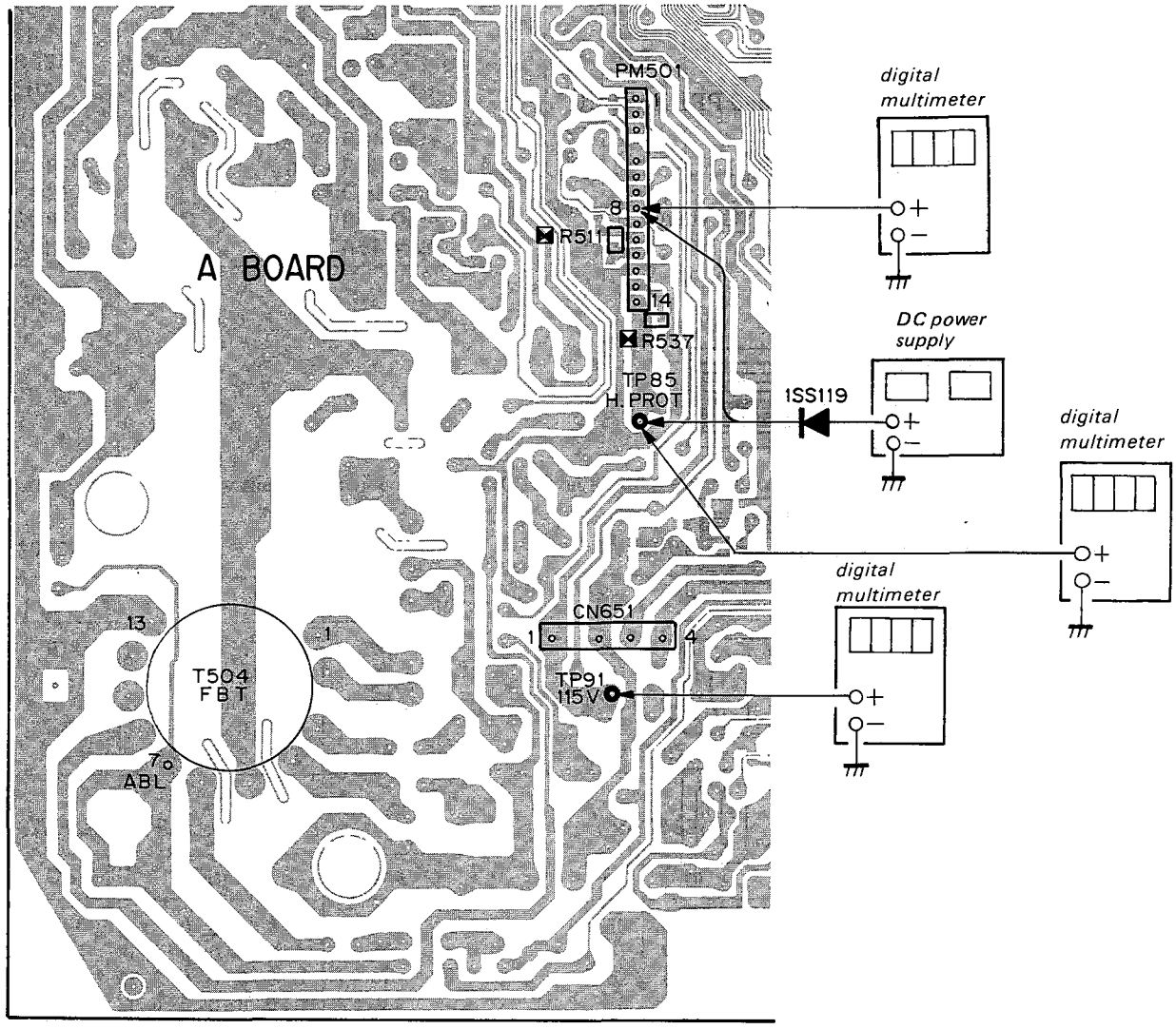
## G BOARD

### B+ VOLTAGE CONFIRMATION

The following adjustments should always be performed when replacing IC602 or R637.

1) Supply 130±2%V AC to with variable autotransformer.
2) Input an entirely monoscope signal.
3) Set the PICTURE control and the BRIGHT controls in to initial reset.
4) Confirm the voltage of A BOARD ① pin CN651 connecter is less than 116.5V DC.
5) If step 4) is not satisfied, replace IC602 and R637 repeat above steps.


G BOARD
5
1
R637
IC602
E 16V E 115V
CN605


A BOARD
PM501
1
19
3
R511
14
R537
TP85
H. PROT
1SS119
CN651
1
4
13
1
T504
FBT
7
ABL
TP91
115V
digital
multimeter
DC power
supply
digital
multimeter
digital
multimeter

# SECTION 5
# CIRCUIT ADJUSTMENTS

## 5-1. ELECTRICAL ADJUSTMENT BY REMOTE COMMANDER

Use of Remote Commander (RM-Y116) can be performed circuit adjustments about this model.

NOTE : Test Equipment Required.

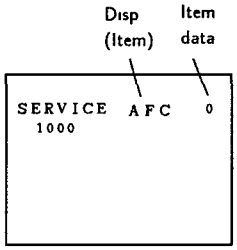
1. Pattern Generator
2. Frequency counter
3. Digital multimeter
4. Audio OSC

### 1. METHOD OF SETTING THE SERVICE ADJUSTMENT MODE

SERVICE MODE PROCEDURE

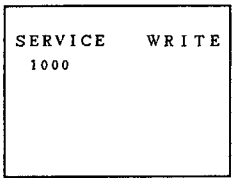
1) Standby mode.(Power off)
2) [DISPLAY] → [5] → [VOL (+)] → [POWER] on the Remote Commander. (Press each button within a second.)

SERVICE ADJUSTMENT MODE IN



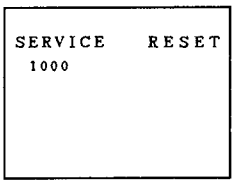

3) The CRT displays the item Being adjusted.
4) Press [1] or [4] on the Remote Commander to select the item.
5) Press [3] or [6] on the Remote Commander to change the data.
6) Press [MUTING] then [ENTER] to write into memory.

SERVICE ADJUSTMENT MODE MEMORY




[MUTING] Green
↓
[ENTER] Red

7) Press [8] then [ENTER] on the Remote Commander to initlalize.




Carry out step 7) when adjusting IDs 0 to 4 and when replacing and adjusting IC102.

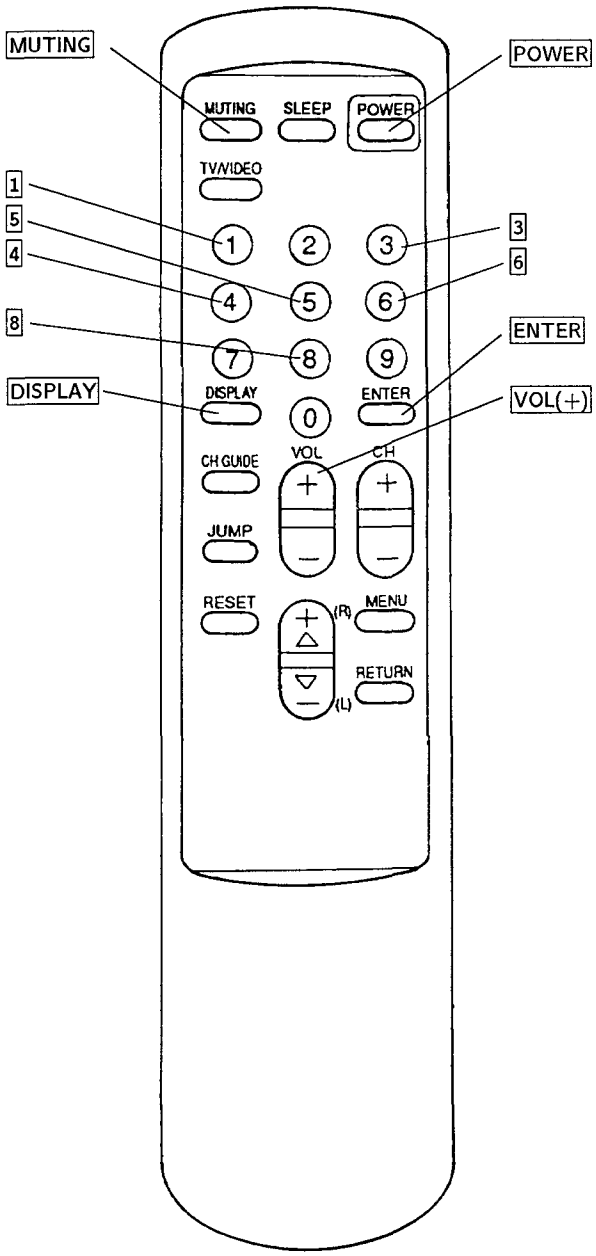
Factory original setting

8) Turn set off and on to exit.

### 2. MEMORY WRITE CONFIRMATION METHOD

1) After adjustment, pull out the plug from AC outlet, and next place, plug in AC outlet again.
2) Turn the power switch ON and set to Service Mode.
3) Call the adjusted items again, confirm they were adjusted.

### 3. ADJUST BUTTONS AND INDICATOR



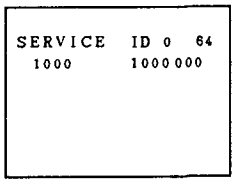

RM-Y116

## 4. AN ITEM OF ADJUSTMENTS

| No | Disp. | Ave data | Data range | Item |
|---|---|---|---|---|
| 1 | AFC | * 0 | 0~3 | AFC Loop Gain |
| 2 | HFRE | 78 | 0~127 | H. Frequency |
| 3 | VFRE | 15 | 0~31 | V. Frequency |
| 4 | VPOS | 20 | 0~31 | V. Center |
| 5 | VSIZ | 31 | 0~63 | V. Size |
| 6 | VLIN | 8 | 0~15 | V Linearity |
| 7 | VSCO | 6 | 0~15 | V. Correction |
| 8 | HPOS | 6 | 0~15 | H. Center |
| 9 | HSIZ | 16 | 0~31 | H. Size |
| 10 | PAMP | 23 | 0~31 | Pin Amp |
| 11 | CPIN | 4 | 0~7 | Corner Pin |
| 12 | PPHA | 7 | 0~15 | Pin Phase |
| 13 | VCOM | * 2 | 0~7 | V. Compensation |
| 14 | GAMP | 21 | 0~31 | Green Amp |
| 15 | BAMP | 16 | 0~31 | Blue Amp |
| 16 | GCUT | 6 | 0~15 | Green Cut Off |
| 17 | BCUT | 7 | 0~15 | Blue Cut Off |
| 18 | CROM | 26 | 0~63 | Chroma Trap |
| 19 | SPIX | 32 | 0~63 | Sub Contrast |
| 20 | SHUE | 25 | 0~63 | Sub Hue |
| 21 | SCOL | 30 | 0~63 | Sub Color |
| 22 | SBRT | 34 | 0~63 | Sub Bright |
| 23 | RGBP | * 18 | 0~63 | RGB Picture |
| 24 | SHAP | * 7 | 0~15 | Sharpness |
| 25 | VSMO | * 0 | 0, 1 | V Pull in Range |
| 26 | REF | * 2 | 0~3 | Refference line |
| 27 | ROFF | 1 | 0, 1 | Red Out |
| 28 | GOFF | 1 | 0, 1 | Green Out |
| 29 | BOFF | 1 | 0, 1 | Blue Out |
| 30 | ABLM | * 0 | 0, 1 | ABL Mode |
| 31 | NOTC | * 0 | 0, 1 | Notch On/Off |
| 32 | DRGB | * 0 | 0, 1 | OSD intensity |
| 33 | VANG | not use | 0~63 | V Angle |
| 34 | DISP | 40 | 0~63 | Display Position |
| 35 | SVOL | * 0 | 0~7 | Sub Volume |
| 36 | SBAL | 7 | 0~7 | Sub Balance |
| 37 | BASS | not use | 0~15 | Sub Bass |
| 38 | TRE | not use | 0~15 | Sub Treble |
| 39 | UYBO | not use | 0~63 | Upper Y. Bow |
| 40 | LYBO | not use | 0~63 | Lower Y. Bow |
| 41 | HAMP | not use | 0~63 | H. Amp |
| 42 | HTIL | not use | 0~63 | H. Tilt |
| 43 | UCBO | not use | 0~63 | Upper C Bow |
| 44 | UTIL | not use | 0~63 | Upper Tilt |
| 45 | LCBO | not use | 0~63 | Lower C. Bow |
| 46 | LTIL | not use | 0~63 | Lower Tilt |
| 47 | DCSH | not use | 0~63 | DC. Shift |
| 48 | PHPO | not use | 0~127 | PinP H Position |
| 49 | PHUE | not use | 0~63 | PinP Hue |
| 50 | ID-0 | * 64 | 0~127 | KV-20TS29/2170RS/21STR2 |
| | ID-0 | * 104 | 0~127 | KV-20ST32 |
| 51 | ID-1 | * 33 | 0~127 | Model ID |
| 52 | ID-2 | * 64 | 0~127 | KV-20TS29 (US)/20TS32 /2170RS/21STR2 |
| | ID-2 | * 0 | 0~127 | KV-20TS29 (CND) |
| 53 | ID-3 | * 0 | 0~127 | Model ID |
| 54 | ID-4 | * 16 | 0~127 | Model ID |

* Set-up value

Note No.from 1 to 54 is to show adjusment order




Please adjust the function values as shown below when IC 102 on A board was replaced

KV-20TS29 (US)

| No | Disp. | Disp | Data |
|---|---|---|---|
| 50 | ID-0 | 1 0 0 0 0 0 0 | 64 |
| 51 | ID-1 | 0 1 0 0 0 0 1 | 33 |
| 52 | ID-2 | 1 0 0 0 0 0 0 | 64 |
| 53 | ID-3 | 0 0 0 0 0 0 0 | 0 |
| 54 | ID-4 | 0 0 1 0 0 0 0 | 16 |

KV-20TS29 (CND)

| No. | Disp | Disp. | Data |
|---|---|---|---|
| 50 | ID-0 | 1 0 0 0 0 0 0 | 64 |
| 51 | ID-1 | 0 1 0 0 0 0 1 | 33 |
| 52 | ID-2 | 0 0 0 0 0 0 0 | 0 |
| 53 | ID-3 | 0 0 0 0 0 0 0 | 0 |
| 54 | ID-4 | 0 0 1 0 0 0 0 | 16 |

KV-2170RS/21STR2

| No | Disp | Disp. | Data |
|---|---|---|---|
| 50 | ID-0 | 1 0 0 0 0 0 0 | 64 |
| 51 | ID-1 | 0 1 0 0 0 0 1 | 33 |
| 52 | ID-2 | 0 1 0 0 0 0 0 | 32 |
| 53 | ID-3 | 0 0 0 0 0 0 0 | 0 |
| 54 | ID-4 | 0 0 1 0 0 0 0 | 16 |

KV-20TS32

| No. | Disp | Disp | Data |
|---|---|---|---|
| 50 | ID-0 | 1 1 0 1 0 0 0 | 104 |
| 51 | ID-1 | 0 1 0 0 0 0 1 | 33 |
| 52 | ID-2 | 1 0 0 0 0 0 0 | 64 |
| 53 | ID-3 | 0 0 0 0 0 0 0 | 0 |
| 54 | ID-4 | 0 0 1 0 0 0 0 | 16 |

## 5-2. A BOARD ADJUSTMENTS

### RF AGC ADJUSTMENT(IF BLOCK VR)

1) Input a color-bar signal.
2) Adjust AGC VR of TU 101 so that snow noise and cross-modulation disappear from the picture.
3) Confirm them at every channel.

### H.FREQUENCY ADJUSTMENT (HFRE)

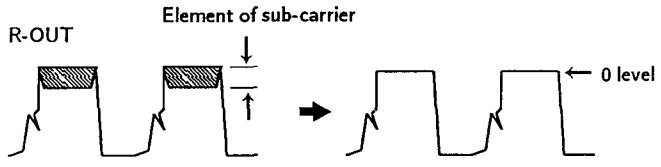
1) Input a color-bar signal.
2) Set to Service adjustment Mode.
3) Connect a frequency counter to base of Q 550 (TP -86 H.DRIVE).
4) Call the item of AFC, set to 3 level (free run).
5) Select HFRE with 1 and 4.
6) Adjust with 3 and 6 for the 15734± 60 Hz.
7) Call the item of AFC again, adjust the level" 0 ".
8) Write into the memory by pressing MUTING then ENTER.

### V.FREQUENCY ADJUSTMENT (VFRE)

1) Select video 1 with no connecting the signal.
2) Set to Service adjustment Mode.
3) Connect the frequency counter across connector VDY (+) (CN501) connector and ground.
4) Select VFRE with 1 and 4.
5) Adjust with 3 and 6 for the 55 ±0.5Hz.
6) Write the memory by pressing MUTING then ENTER .

### CROMA TRAP ADJUSTMENT (CROM)

1) Input a red signal
2) Set to Service adjustment Mode.
3) Connect an oscilloscope CN703 Pin① (R OUT) of C board ground.
4) Select CROM with 1 and 4.
5) Adjust with 3 and 6 for the 0 level.

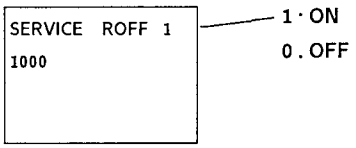



6) Write the memory by pressing MUTING then ENTER .

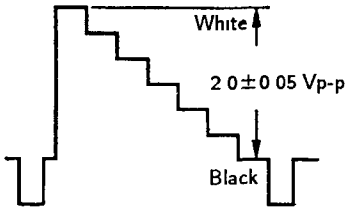
### SUB CONTRAST ADJUSTMENT (SPIX)

1) Input a color-bar signal.
2) Set to Service adjustment Mode.
3) Set the conditions as follows.

| | |
|---|---|
| PICTURE | MAX |
| COLOR | MIN |
| BRIGHT | MIN |
| R OFF | ON (1) |
| G OFF | OFF (0) |
| B OFF | OFF (0) |




4) Connect an oscilloscope to CN703 Pin① (R OUT) of C board and ground.
5) Select SPIX with 1 and 4.
6) Adjust with 3 and 6 for the 2.0±0.05 Vp-p.

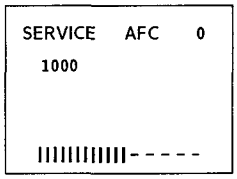



7) Write the memory by pressing MUTING then ENTER .
8) Return the following back to normal after adjustment.

| | |
|---|---|
| PICTURE | MAX |
| BRIGHT | CENTER |
| COLOR | CENTER |
| R OFF | ON |
| G OFF | ON |
| B OFF | ON |

## DISPLAY POSITION ADJUSTMENT (DISP)

1) Input a color-bar signal.
2) Set to service adjustment Mode.
3) Select DISP with 1 and 4.
4) Adjust with 3 and 6 for the bar center.
5) Write the memory by pressing MUTING then ENTER .




## SUB BRIGHT ADJUSTMENT (SBRT)

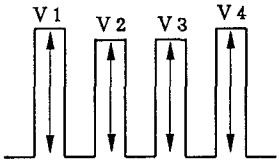
1) Input a cross-hatch signal
2) Set to service adjustment mode.
3) Set the PICTURE and BRIGHT to minimum.
4) Select SBRT with 1 and 4.
5) Adjust with 3 and 6 for obtain a faintly visible cross-hatch.
6) Write into the memory by pressing MUTING then ENTER

## SUB BALANCE ADJUSTMENT (SBAL)

1) Input a stereo signal.
2) Set to service adjustment mode.
3) Select SBAL with 1 and 4.
4) Adjust with 3 and 6 for the best sound balance.
5) Write into the memory by pressing MUTING then ENTER .

## SUB HUE, SUB COLOR ADJUSTMENT (SHUE, SCOL)

1) Input a color-bar signal
2) Set to service adjustment Mode.
3) Connect an oscilloscope to CN703 Pin③ (B OUT) of C board.
4) Select SHUE and SCOL with 1 and 4.
5) Adjust with 3 and 6 for the V1=V4 (SCOR) and V2 =V3 (SHUE).

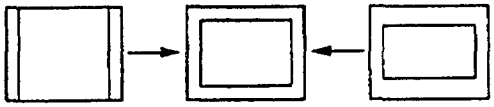



6) Write into the memory by pressing MUTING then ENTER

## V.SIZE ADJUSTMENT (VSIZ)

1) Input a cross-hatch signal.
2) Set to service adjustment Mode.
3) Select VSIZ with 1 and 4.
4) Adjust with 3 and 6 for the best vertical size.
5) Write into the memory by pressing MUTING then ENTER .

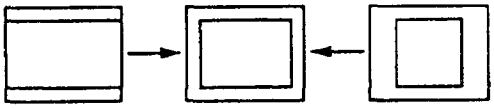
V SIZE (VSIZ)



## H.SIZE ADJUSTMENT (HSIZ)

1) Input a cross-hatch signal.
2) Set to service adjustment Mode.
3) Select HSIZ with 1 and 4.
4) Adjust with 3 and 6 for best horizontal size
5) Write into the memory by pressing MUTING then ENTER .

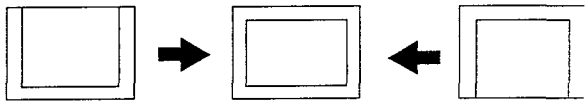
H SIZE (HSIZ)



## V.CENTER ADJUSTMENT (VPOS)

1) Input a cross-hatch signal.
2) Set to service adjustment Mode.
3) Select VPOS with 1 and 4.
4) Adjust with 3 and 6 for the best vertical senter.
5) Write into the memory by pressing MUTING then ENTER .

V CENTER (VPOS)

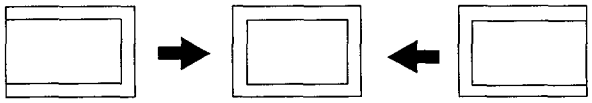


## H.CENTER ADJUSTMENT (H POS)

Note. Perform this adjustment after H.FREQUENCY ADJUSTMENT (HFRE)

1) Input a cross-hatch signal.
2) Set the Service adjustment mode.
3) Select HPOS with 1 and 4 .
4) Adjust with 3 and 6 to the best horizontal center.
5) Write into the memory by pressing MUTING then ENTER .

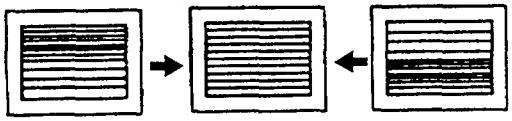
H CENTER (HPOS)



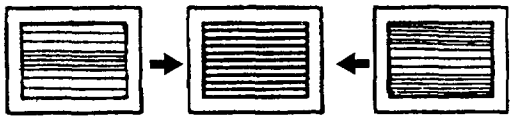
## V LINEARITY(VLIN), VS CORRECTION(VSCO), PIN AMP(PAMP), CORNER PIN(CPIN), AND PIN PHASE(PPHA) ADJUSTMENTS

1) Input a cross-hatch signal.
2) Set to Service adjustment Mode.
3) Select VLIN, VSCO, PAMP, CPIN, and PPHA with 1 and 4.
4) Adjust with 3 and 6 for the best picture.
5) Write the memory byPressing MUTING then ENTER.

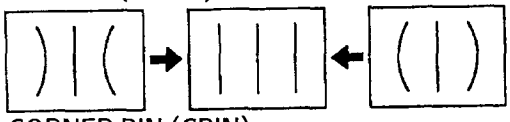
V LINEARITY (VLIN)



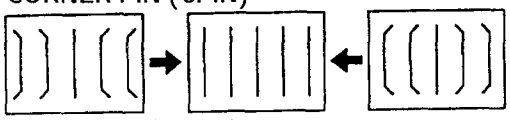
VS CORRECTION (VSCO)



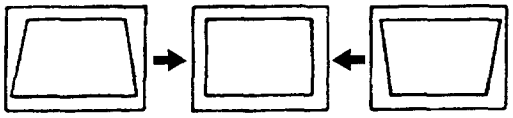
PIN AMP (PAMP)



CORNER PIN (CPIN)



PIN PHASE (PPHA)

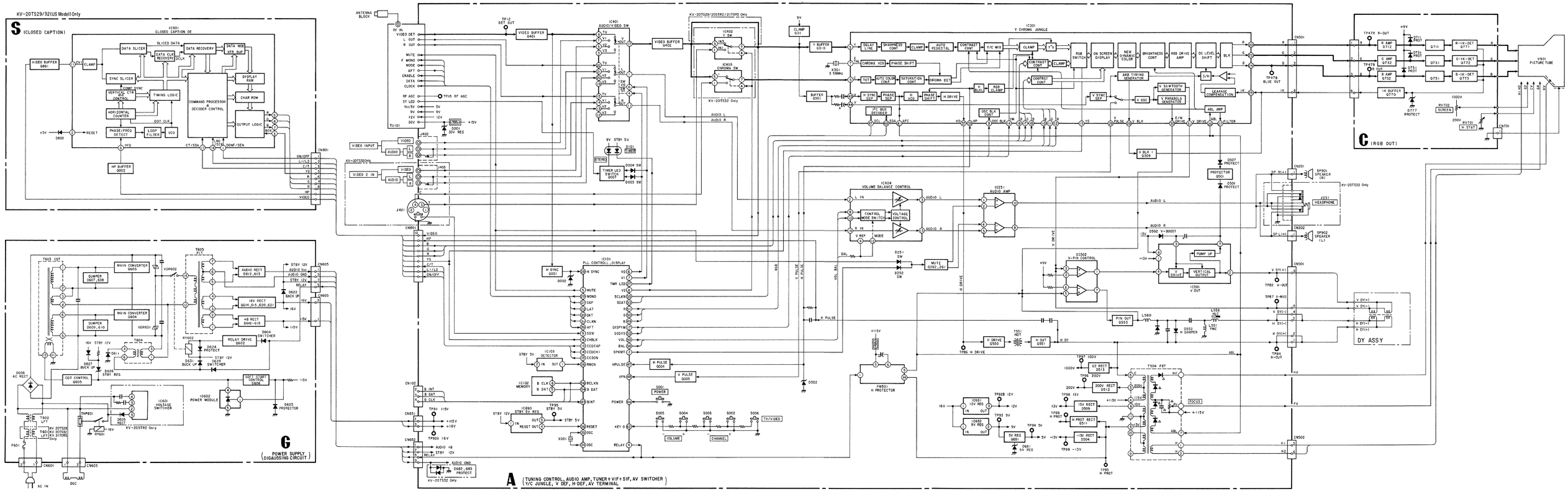


KV-20TS29/20TS32
KV-21STR2/2170RS
RM-Y116

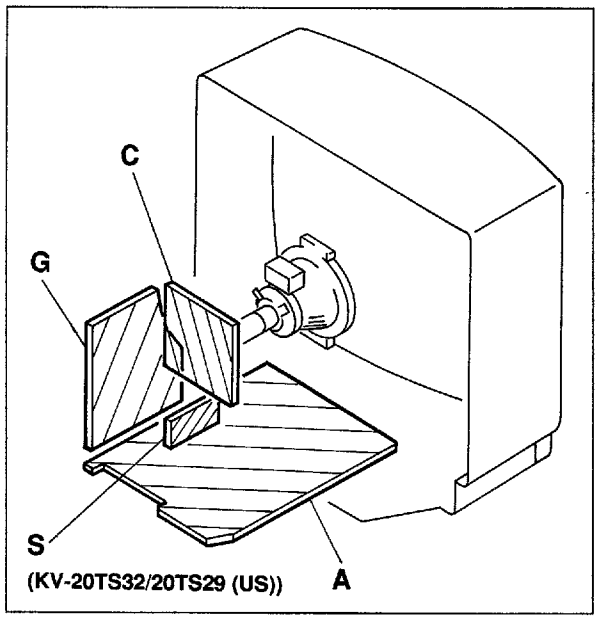
KV-20TS29/20TS32
KV-21STR2/2170RS
RM-Y116

# SECTION 6
# DIAGRAMS

## 6-1. BLOCK DIAGRAM



## 6-2. CIRCUIT BOARDS LOCATION



(KV-20TS32/20TS29 (US))

## 6-3. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

**Note:**

- All capacitors are in μF unless otherwise noted.
  pF: μμF 50WV or less are not indicated except for electrolytic and tantalums.
- All electrolytics are in 50V unless otherwise specified.
- Indication of resistance, which does not have one for rating electrical power, is as follows.

| |
|---|
| Pitch: 5 mm<br>Rating electrical power 1/4W |

- All resistors are in ohms.
  kΩ=1000Ω, MΩ=1000KΩ
- : nonflammable resistor.
- △: internal component.
- : panel designation, and adjustment for repair.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- The components identified by ◪ in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation.
  Should replacement be required, replace only with the value originally used.
- When replacing components identified by ◪, make the necessary adjustments indicated. If results do not meet the specified value, change the component identified by ⊠ and repeat the adjustment until the specified value is achieved.
  (Refer to R511 and R537 on page 30,31)
- When replacing the part in below table be sure to parform the related adjustment.

| Part replaced (◪) | | Adjustment (⊠) |
|---|---|---|
| C524, R511,R534, R549, R565, PM501 | A BOARD | B+ HOLD-DOWN (R511) |
| IC602, R637 | G BOARD | |
| D511, C523, C524, R534, R535, R537, R549, R565, PM501, T504 | A BOARD | HV HOLD-DOWN (R537) |
| IC602, R637 DY | G BOARD | |

- All voltages are in V.
- Voltage are dc with respect to ground unless otherwise noted.
- Readings are taken with a 10 MΩ digital multimeter.
- Readings are taken with a color-bar signal input.
- Voltage variations may be noted due to normal production tolerance.
- Circled numbers are waveform references.
- : B+ Line.
- : signal path.

**Reference information**

| | | |
|---|---|---|
| RESISTOR | : RN | METAL FILM |
| | : RC | SOLID |
| | : FPRD | NONFLAMMABLE CARBON |
| | : FUSE | NONFLAMMABLE FUSIBLE |
| | : RW | NONFLAMMABLE WIREWOUND |
| | : RS | NONFLAMMABLE METAL OXIDE |
| | : RB | NONFLAMMABLE CEMENT |
| | : ※ | ADJUSTMENT RESISTOR |
| COIL | : LF-8L | MICRO INDUCTOR |
| CAPACITOR | : TA | TANTALUM |
| | : PS | STYROL |
| | : PP | POLYPROPYLENE |
| | : PT | MYLAR |
| | : MPS | METALIZED POLYESTER |
| | : MPP | METALIZED POLYPROPYLENE |
| | : ALB | BIPOLAR |
| | : ALT | HIGH TEMPERATURE |
| | : ALR | HIGH RIPPLE |

Note: The symbol display is on the component side.

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

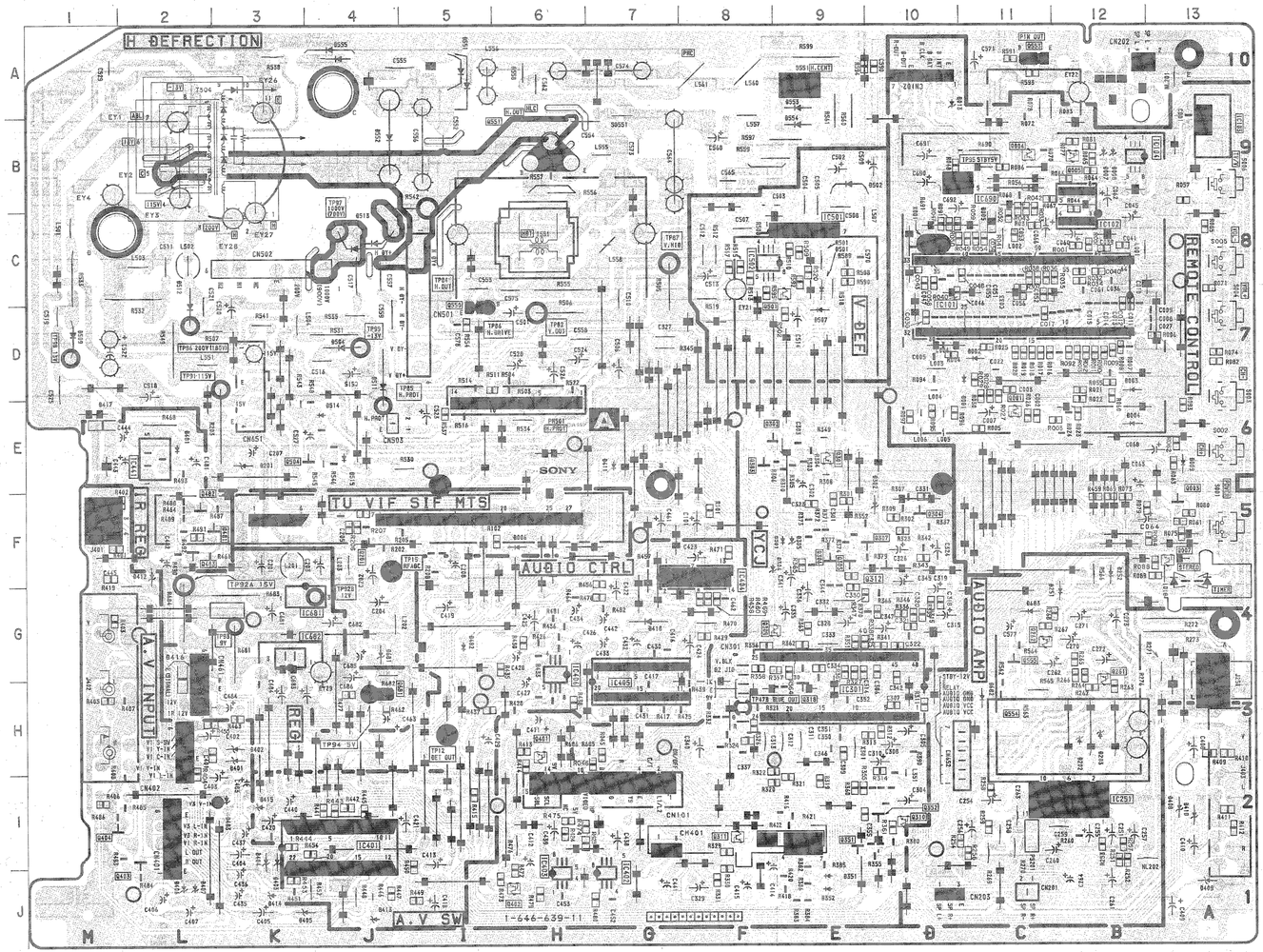
The symbol indicate fast operating fuse. Replace only with fuse of same rating as marked.

Note: Les composants identifiés par un tramé et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Le symbole indique une fusible a action rapide. Doit etre remplacee par une fusible de meme yaleur, comme maque.

**A** TUNING CONTROL, Y/C JUNGLE, TUNER + VIF + MTS
VERTICAL DEFLECTION, HORIZONTAL DEFLECTION, AUDIO AMP
AV SWITCHER, AV TERMINAL

— A Board —





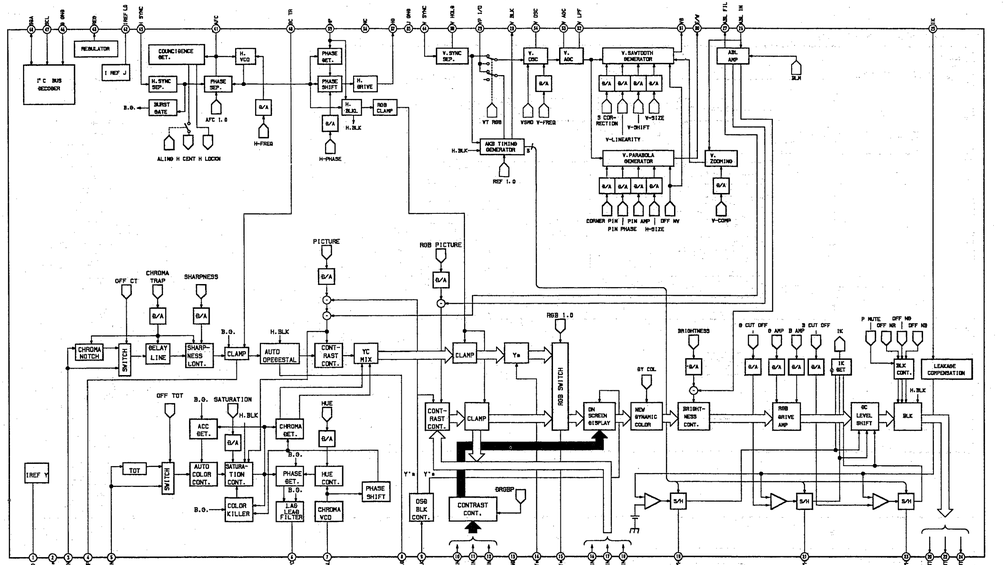

KV-20TS29/20TS32
KV-21STR2/2170RS
RM-Y116

**KV-20TS32 (A BOARD)**

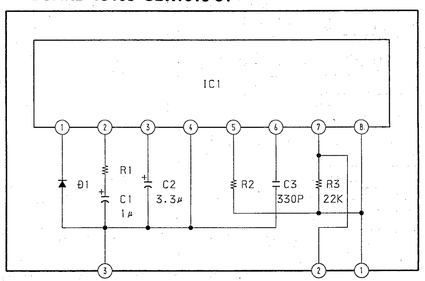
| IC | | DIODE | |
|---|---|---|---|
| IC101 | D-11 | D002 | D-11 |
| IC102 | B-12 | D003 | D-12 |
| IC103 | B-13 | D004 | E-12 |
| IC251 | I-12 | D005 | C-11 |
| IC301 | H-9 | D006 | F-6 |
| IC401 | I-4 | D009 | E-13 |
| IC402 | J-7 | D101 | F-13 |
| IC403 | J-6 | D201 | E-3 |
| IC404 | F-8 | D251 | G-12 |
| IC501 | C-9 | D252 | F-12 |
| IC502 | C-8 | D302 | F-10 |
| IC681 | G-3 | D401 | H-1 |
| IC682 | G-3 | D402 | H-1 |
| IC690 | B-11 | D403 | I-3 |
| PM501 | E-6 | D404 | I-3 |
| | | D405 | J-3 |
| TRANSISTOR | | D408 | I-13 |
| Q001 | E-11 | D409 | J-13 |
| Q004 | B-11 | D410 | I-13 |
| Q005 | B-12 | D412 | F-2 |
| Q007 | F-13 | D413 | G-2 |
| Q261 | G-12 | D501 | C-8 |
| Q262 | G-11 | D502 | B-9 |
| Q301 | E-9 | D504 | D-4 |
| Q309 | G-8 | D507 | D-9 |
| Q310 | I-10 | D509 | D-11 |
| Q311 | I-8 | D511 | D-4 |
| Q401 | H-6 | D512 | D-2 |
| Q402 | J-6 | D513 | C-4 |
| Q501 | C-9 | D551 | A-4 |
| Q550 | C-5 | D552 | B-4 |
| Q551 | B-6 | D681 | G-4 |
| Q553 | A-11 | D682 | H-11 |
| Q681 | H-6 | D683 | G-11 |
| | | TEST POINT | |
| | | TP15 | F-5 |
| | | TP82 | D-6 |
| | | TP84 | C-5 |
| | | TP85 | E-5 |
| | | TP86 | D-5 |
| | | TP87 | C-7 |
| | | TP89 | D-1 |
| | | TP91 | D-2 |
| | | TP92A | G-2 |
| | | TP92B | G-4 |
| | | TP93 | G-3 |
| | | TP94 | H-4 |
| | | TP96 | D-2 |
| | | TP97 | C-4 |
| | | TP99 | D-4 |



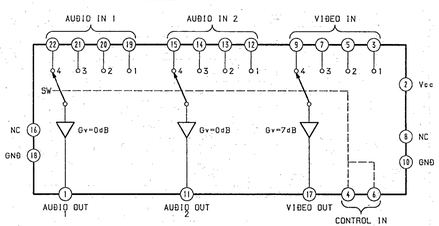
**• A BOARD IC301 CXA1465AS**




**• A BOARD IC103 SBX1618-51**

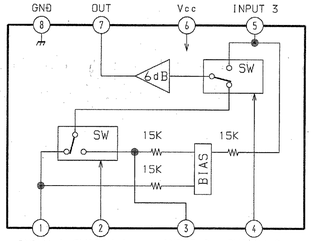



**• A BOARD IC401 M52470AP**

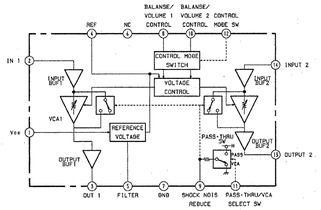



**NOTE:**
The circuit indicated as left contains high voltage of over 600Vp-p. Care must be paid to prevent an electric shock in inspection or repairing.

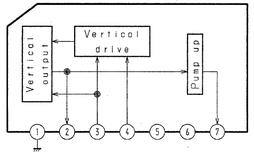
## • A BOARD IC402, IC403 MM1114XFF



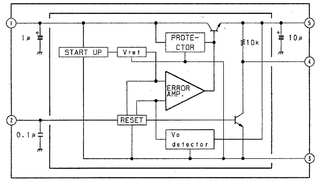

## • A BOARD IC404 M51132L



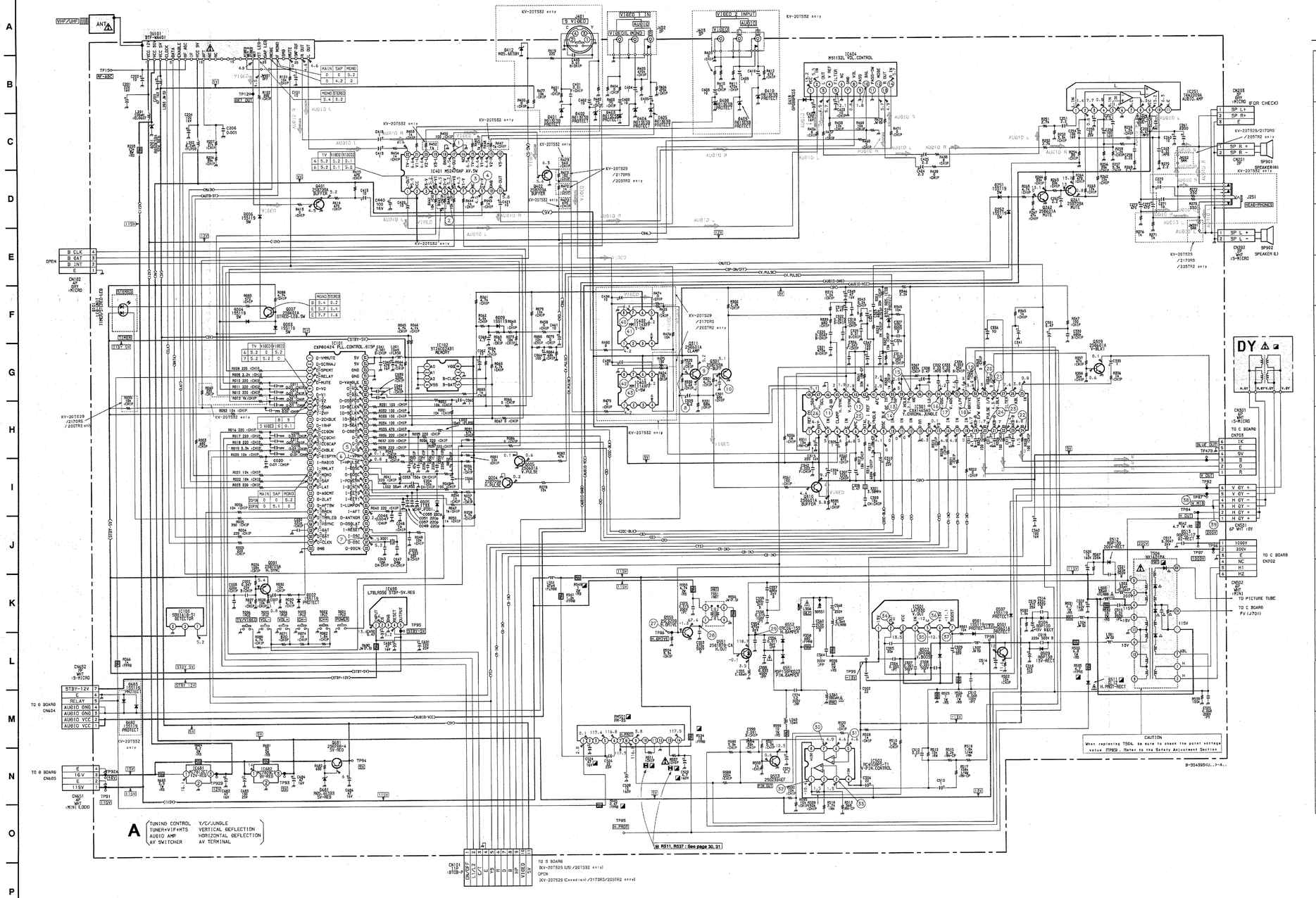

## • A BOARD IC501 LA7830




## • A BOARD IC690 L78LR05D





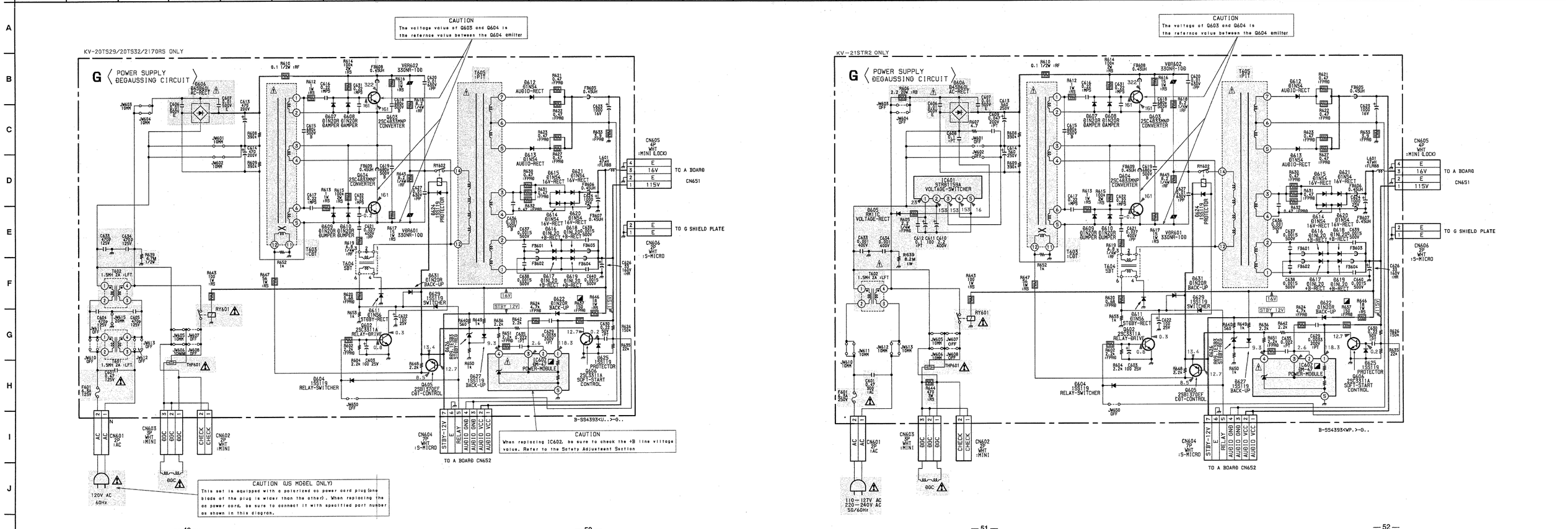







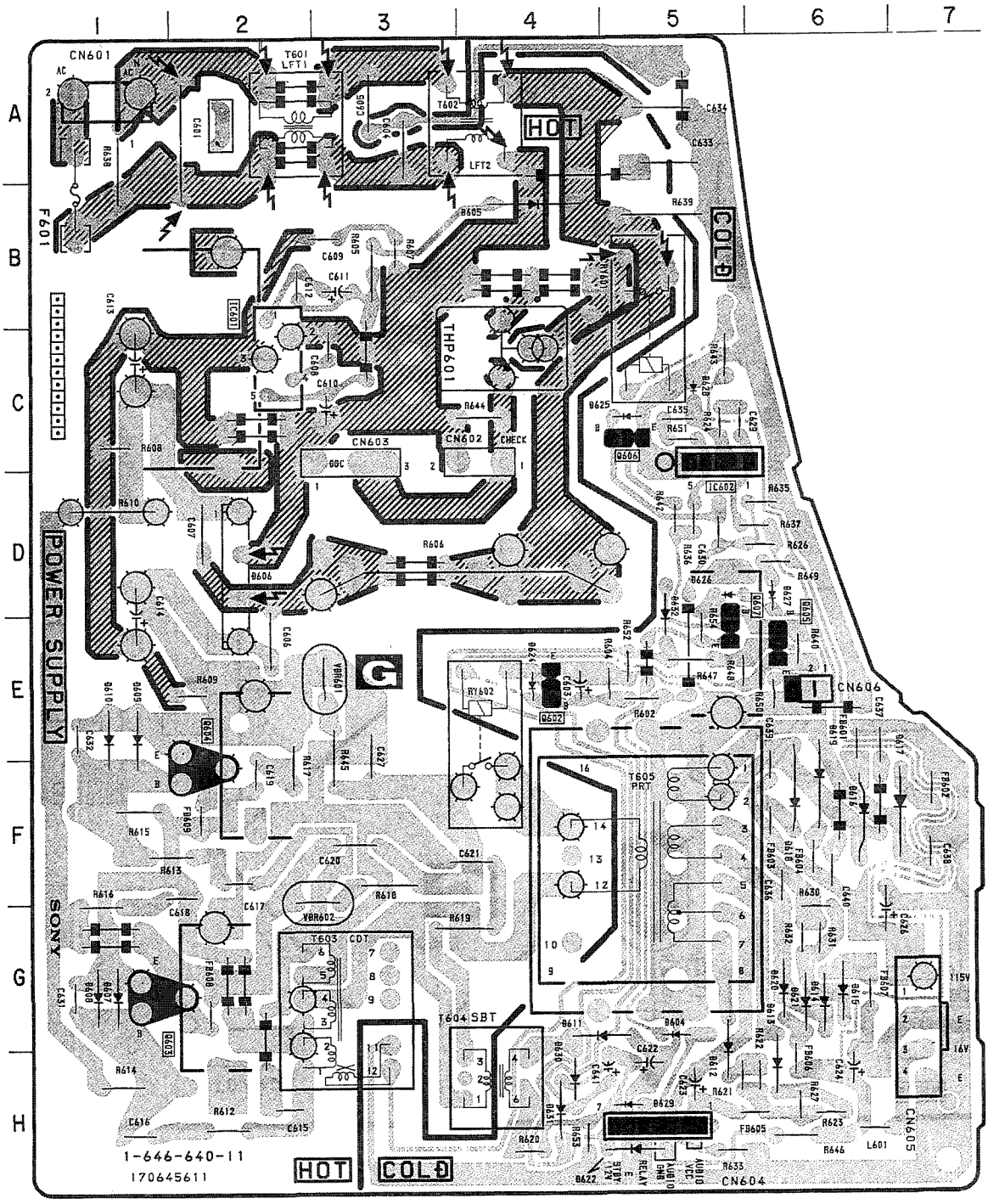

— A Board —

| | | |
|---|---|---|
| ① TV IN<br>2.6 Vp-p ( H ) | ① VIDEO IN<br>2.2 Vp-p ( H ) | ② VIDEO 2<br>1 Vp-p ( H ) |
| ③ VIDEO 1<br>1 Vp-p ( H ) | ④ TV IN<br>1.2 Vp-p ( H ) | ⑤<br>5 Vp-p ( V ) |
| ⑥<br>5 Vp-p ( H ) | ⑦<br>5 Vp-p ( 4.2MHz ) | ⑧<br>0.8 Vp-p ( H ) |
| ⑨<br>2.3 Vp-p ( H ) | ⑩<br>2 Vp-p ( H ) | ⑪<br>1.6 Vp-p ( H ) |
| ⑫<br>1.6 Vp-p ( H ) | ⑬<br>5.3 Vp-p ( H ) | ⑭<br>0.35Vp-p ( V ) |
| ⑮<br>4 Vp-p ( H ) | ⑯<br>1.6 Vp-p ( V ) | ⑰<br>2 Vp-p ( V ) |
| ⑱<br>1.3 Vp-p ( V ) | ⑲<br>2 Vp-p ( V ) | ⑳<br>3.6 Vp-p ( V ) |
| ㉑<br>4.6 Vp-p ( V ) | ㉒<br>4.2 Vp-p ( H ) | ㉓<br>4 Vp-p ( H ) |
| ㉔<br>4.2 Vp-p ( H ) | ㉕<br>2.4 Vp-p ( H ) | ㉖<br>2.4 Vp-p ( H ) |
| ㉗<br>3.5 Vp-p ( H ) | ㉘<br>150 Vp-p ( H ) | ㉙<br>880 Vp-p ( H ) |
| ㉚<br>17 Vp-p ( V ) | ㉛<br>1 Vp-p ( V ) | ㉜<br>4 Vp-p ( V ) |
| ㉝<br>0.5 Vp-p ( V ) | ㉞<br>52 Vp-p ( V ) | ㉟<br>3.2 Vp-p ( V ) |
| ㊱<br>4.3 Vp-p ( V ) | ㊲<br>3 Vp-p ( V ) | ㊳<br>1.5 Vp-p ( V ) |
| ㊴<br>195 Vp-p ( H ) | ㊵ S VIDEO IN<br>2 Vp-p ( H ) | ㊶ S VIDEO IN<br>1 Vp-p ( H ) |
| ㊷ S VIDEO IN<br>1.3 Vp-p ( H ) | ㊸ S VIDEO IN<br>0.7 Vp-p ( H ) | ②,㊵-㊸<br>KV-20TS32 only |


KV-20TS29/20TS32/2170RS ONLY
G POWER SUPPLY DEGAUSSING CIRCUIT
CAUTION
The voltage value of Q603 and Q604 is the refernce value between the Q604 emitter
CAUTION
When replacing IC602, be sure to check the +B line vlitage value. Refer to the Safety Adjustment Section
CAUTION (US MODEL ONLY)
This set is equipped with a polarized ac power cord plug (one blade of the plug is wider than the other). When replacing the ac power cord, be sure to connect it with specified part number as shown in this diagram.
120V AC 60Hz
TO A BOARD CN651
TO G SHIELD PLATE
TO A BOARD CN652
B-SS4393<U..>-0..
KV-21STR2 ONLY
G POWER SUPPLY DEGAUSSING CIRCUIT
CAUTION
The voltage of Q603 and Q604 is the refernce value between the Q604 emitter
110-127V AC 220-240V AC 50/60Hz
TO A BOARD CN651
TO G SHIELD PLATE
TO A BOARD CN652
B-SS4393<WP.>-0..

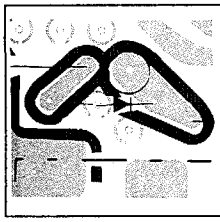
# G [POWER SUPPLY, DEGAUSSING CIRCUIT]

**— G Board —**




**G BOARD**

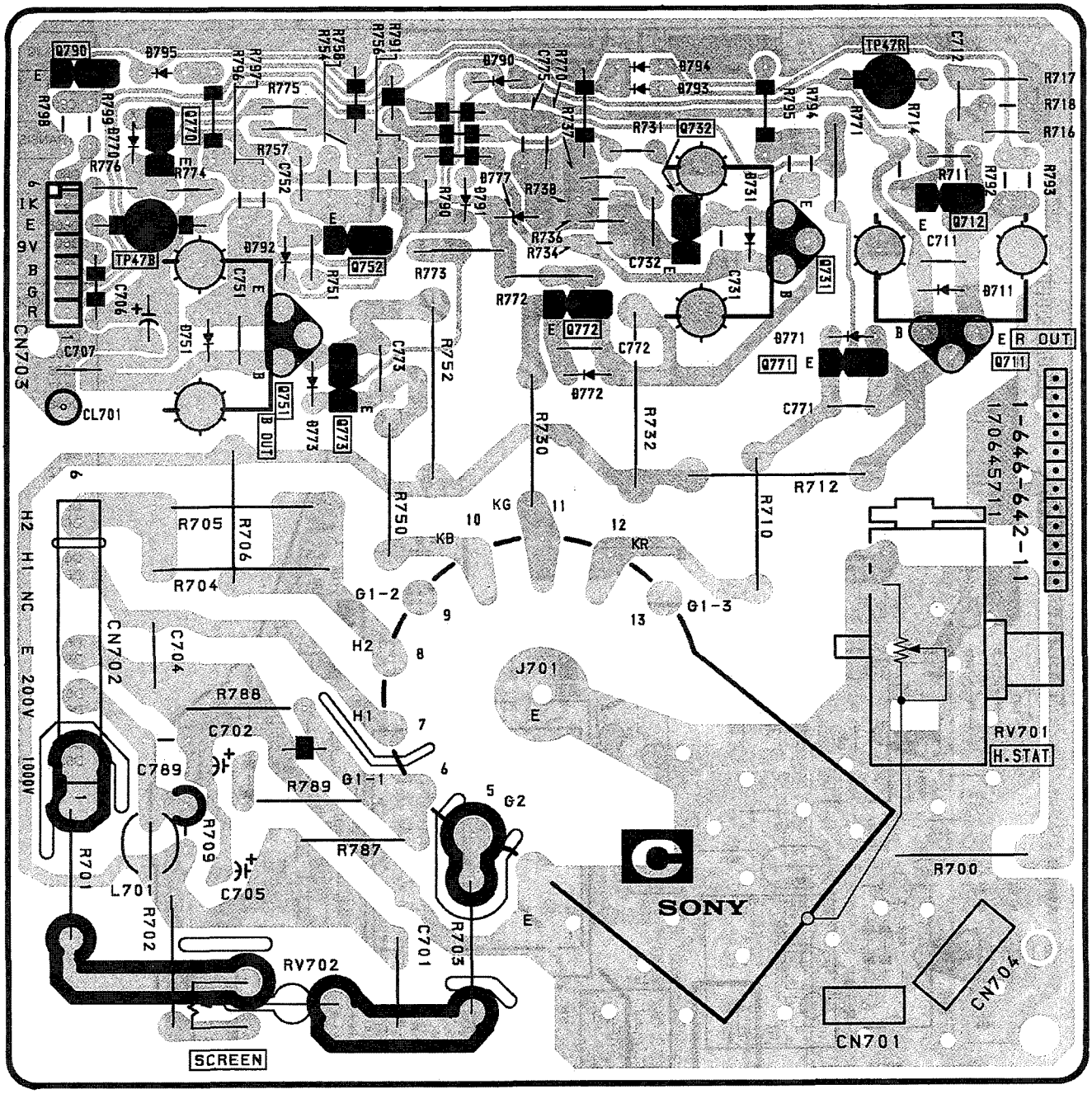
| IC | |
|---|---|
| IC601 | B-3 |
| IC602 | C-5 |
| **TRANSISTOR** | |
| Q602 | E-4 |
| Q603 | G-1 |
| Q604 | F-2 |
| Q605 | E-6 |
| Q606 | C-5 |
| Q607 | E-5 |
| **DIODE** | |
| D604 | G-5 |
| D605 | B-4 |
| D606 | D-2 |
| D607 | G-1 |
| D608 | G-1 |
| D609 | E-1 |
| D610 | E-1 |
| D611 | G-4 |
| D612 | H-5 |
| D613 | H-6 |
| D614 | G-6 |
| D615 | G-6 |
| D616 | F-6 |
| D617 | F-7 |
| D618 | F-6 |
| D619 | F-6 |
| D620 | G-6 |
| D621 | G-6 |
| D622 | H-5 |
| D624 | E-4 |
| D625 | C-5 |
| D627 | D-6 |
| D629 | H-5 |
| D630 | H-4 |
| D631 | H-4 |
| D632 | E-4 |



**NOTE:**
The circuit indicated as left contains high voltage of over 600Vp-p. Care must be paid to prevent an electric shock in inspection or repairing.

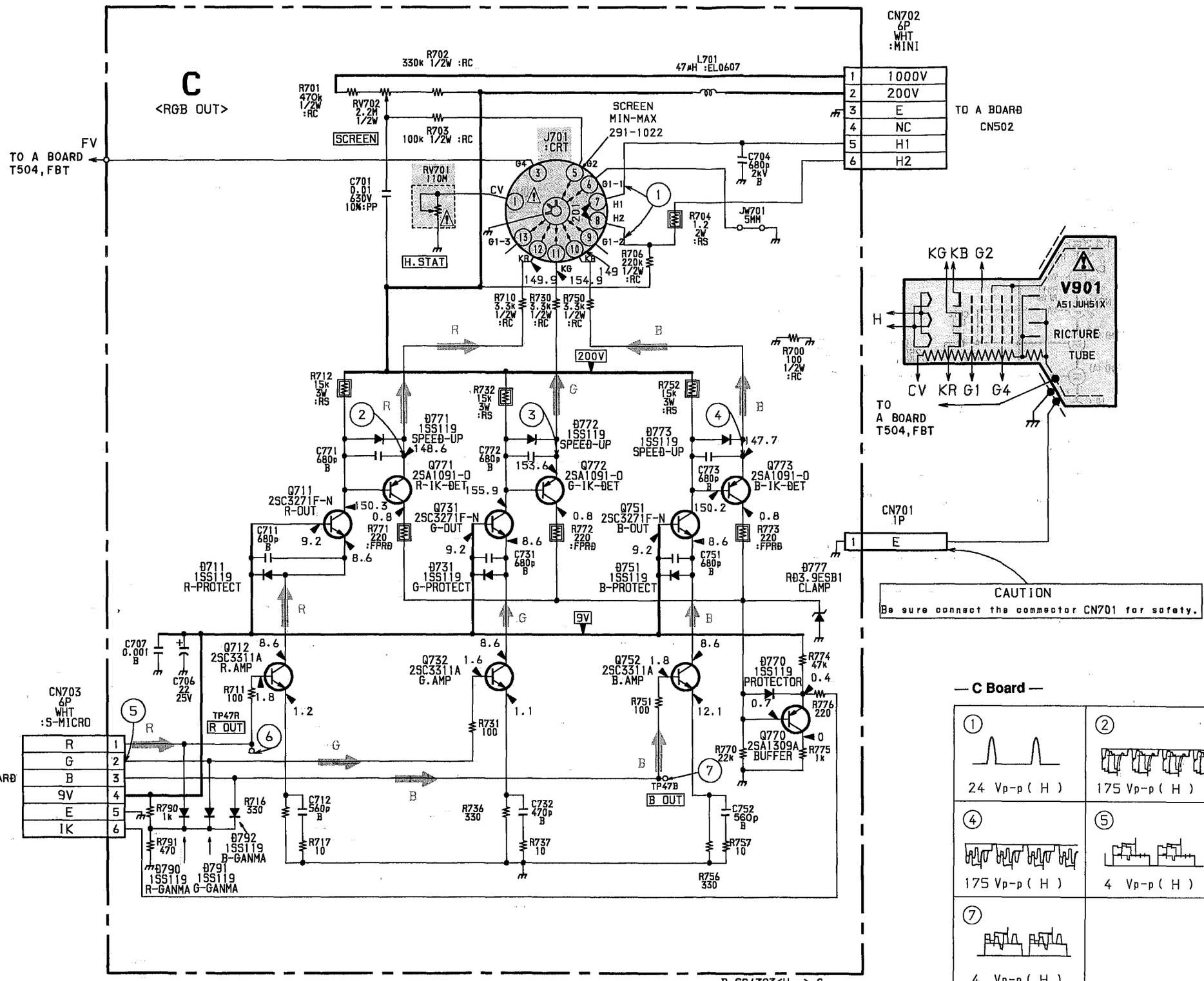
# C [R.G.B. OUT]

**— C Board —**




**NOTE:**
The circuit indicated as left contains high voltage of over 600Vp-p. Care must be paid to prevent an electric shock in inspection or repairing.

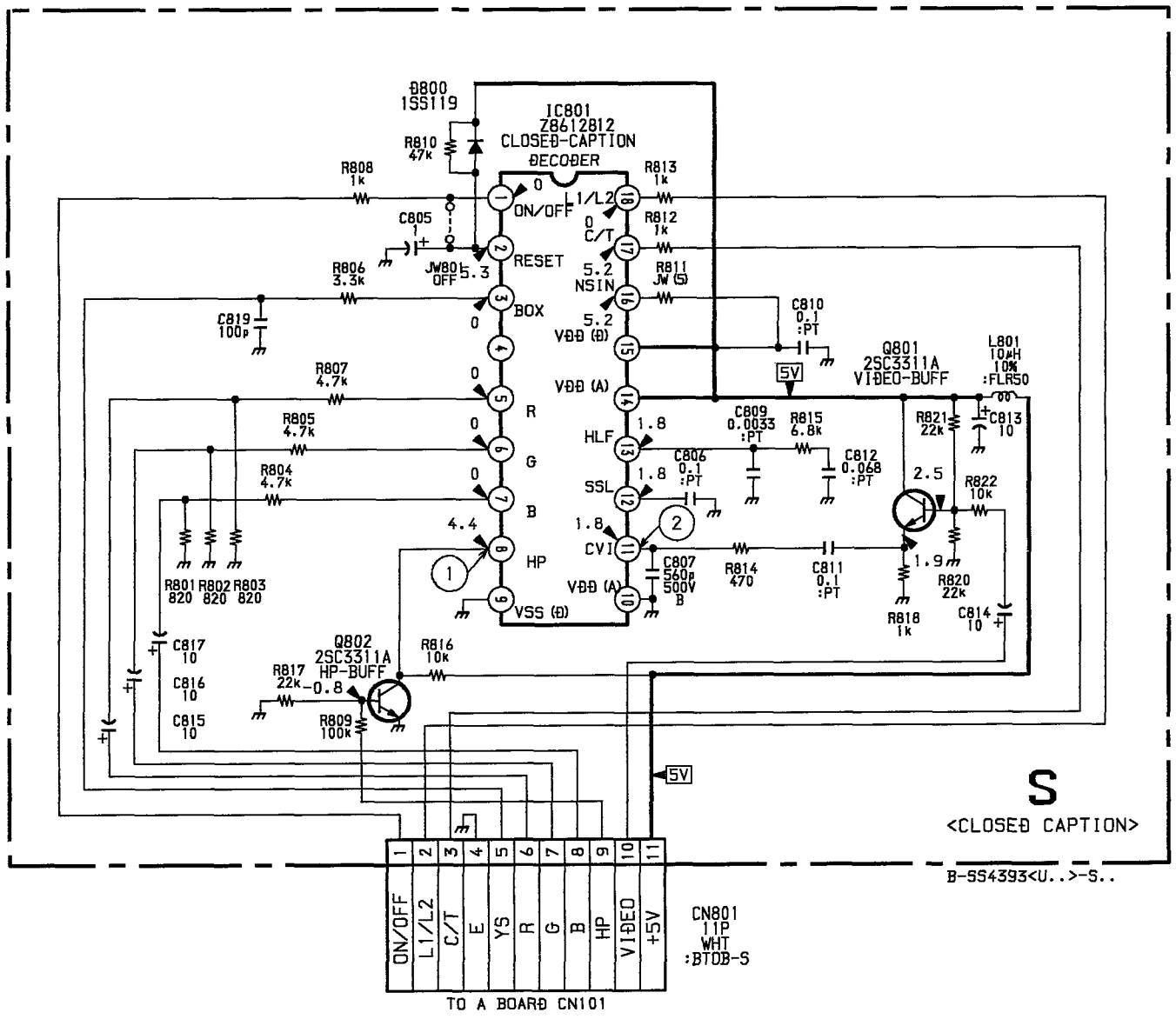
KV-20TS29/20TS32
KV-21STR2/2170RS
RM-Y116




— C Board —

| | | |
|---|---|---|
| ① 24 Vp-p ( H ) | ② 175 Vp-p ( H ) | ③ 175 Vp-p ( H ) |
| ④ 175 Vp-p ( H ) | ⑤ 4 Vp-p ( H ) | ⑥ 4 Vp-p ( H ) |
| ⑦ 4 Vp-p ( H ) | | |

KV-20TS29/32(US MODEL) ONLY

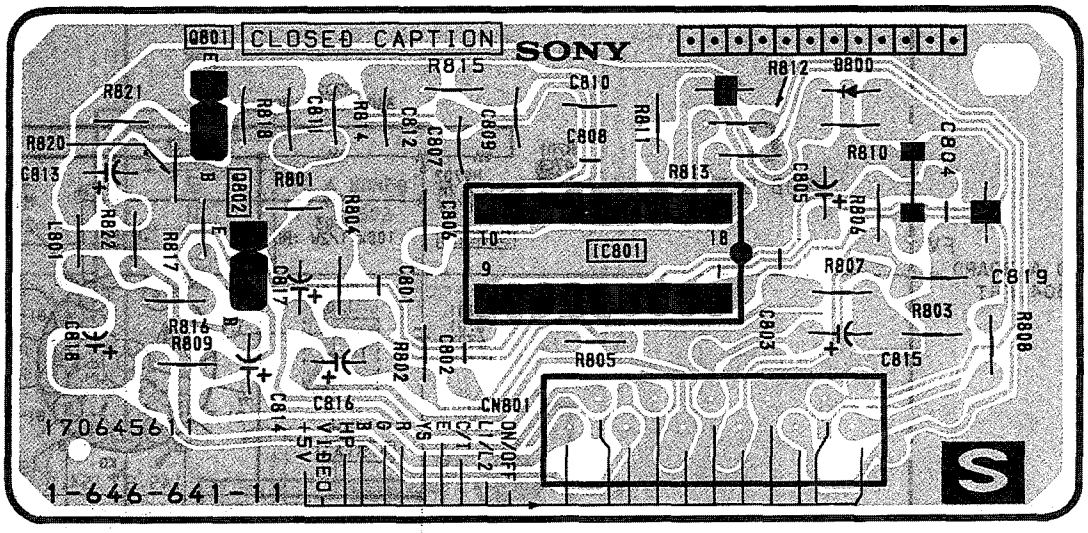



— S Board —

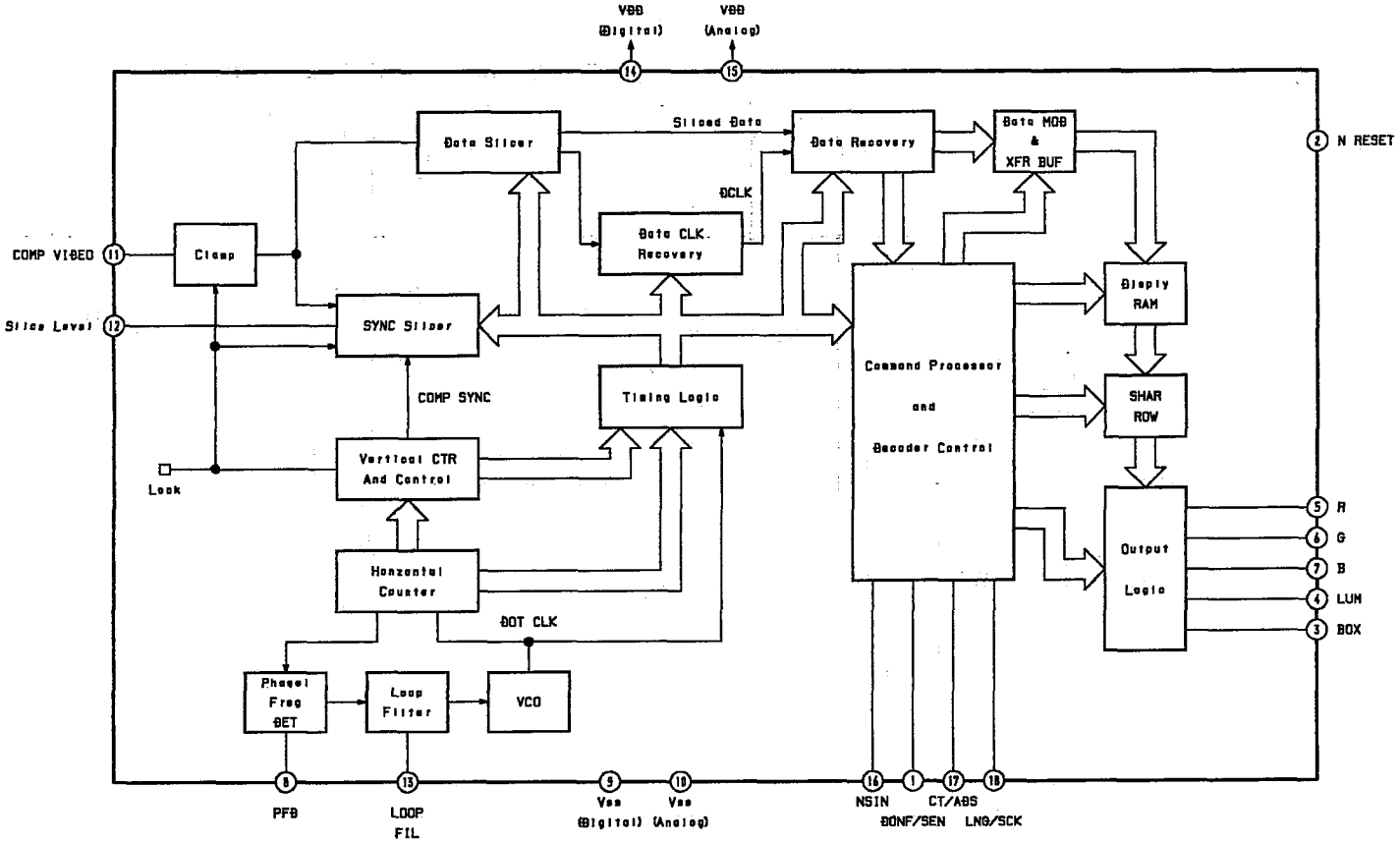
| ① | ② |
|---|---|
| 5 Vp-p ( H ) | 1 Vp-p ( H ) |

# S [CLOSED CAPTION]

**— S Board —**

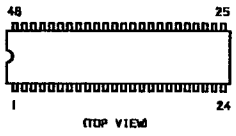



## • S BOARD IC801 Z8612812PSC

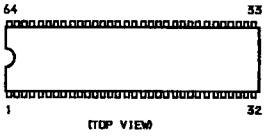


## 6-4. SEMICONDUCTORS

CXA1465AS

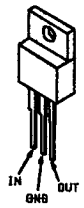



CXP8024-SV4397



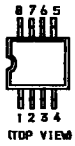

LA7830

LM7812CT
MC7812CT
MC7809CT

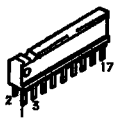



L78LR05Đ-MA

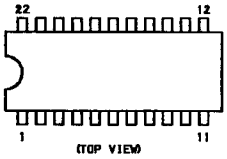
MM1114XFF
RC4558PS



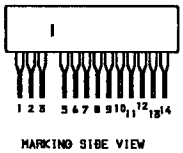

M51132L



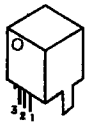

M52470AP
M52470P



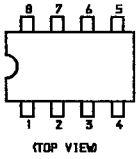

PM-35



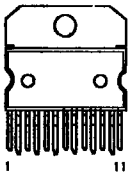

SBX1618-51




ST24C02AB1




TĐA2009A

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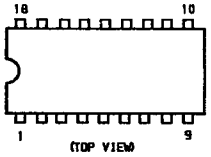


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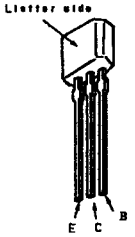
2SC2785
2SC3311A

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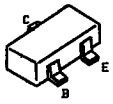
2SB709A
2SĐ601A

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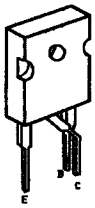
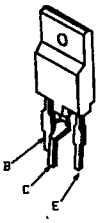



2SC4833MNP

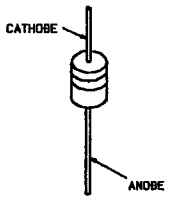
2SĐ1878




2SĐ2394

2SĐ788

Đ1NS4
Đ1NS6
Đ1NS20R
RĐ13ESB2
RĐ30ESB2
RĐ30ESB4
RĐ3.9ESB1
RĐ5.1ESB1
RĐ5.6ESB3
RĐ9.1ESB3
1SS119
1SS119TĐ




Đ1NL20
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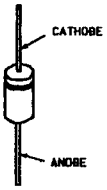
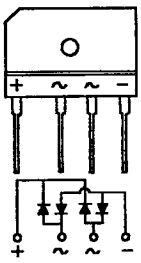
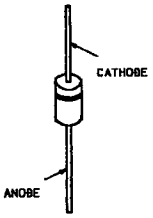
EL1E
EL1E-V1
GP08Đ
RGP02-17
RGP02-17PKG23
RGP10GPKG3
RGP15GPKG23



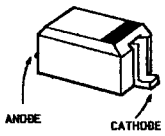

Đ4SB60L




ERC06-15S




1T33



# SECTION 7
# EXPLODED VIEW

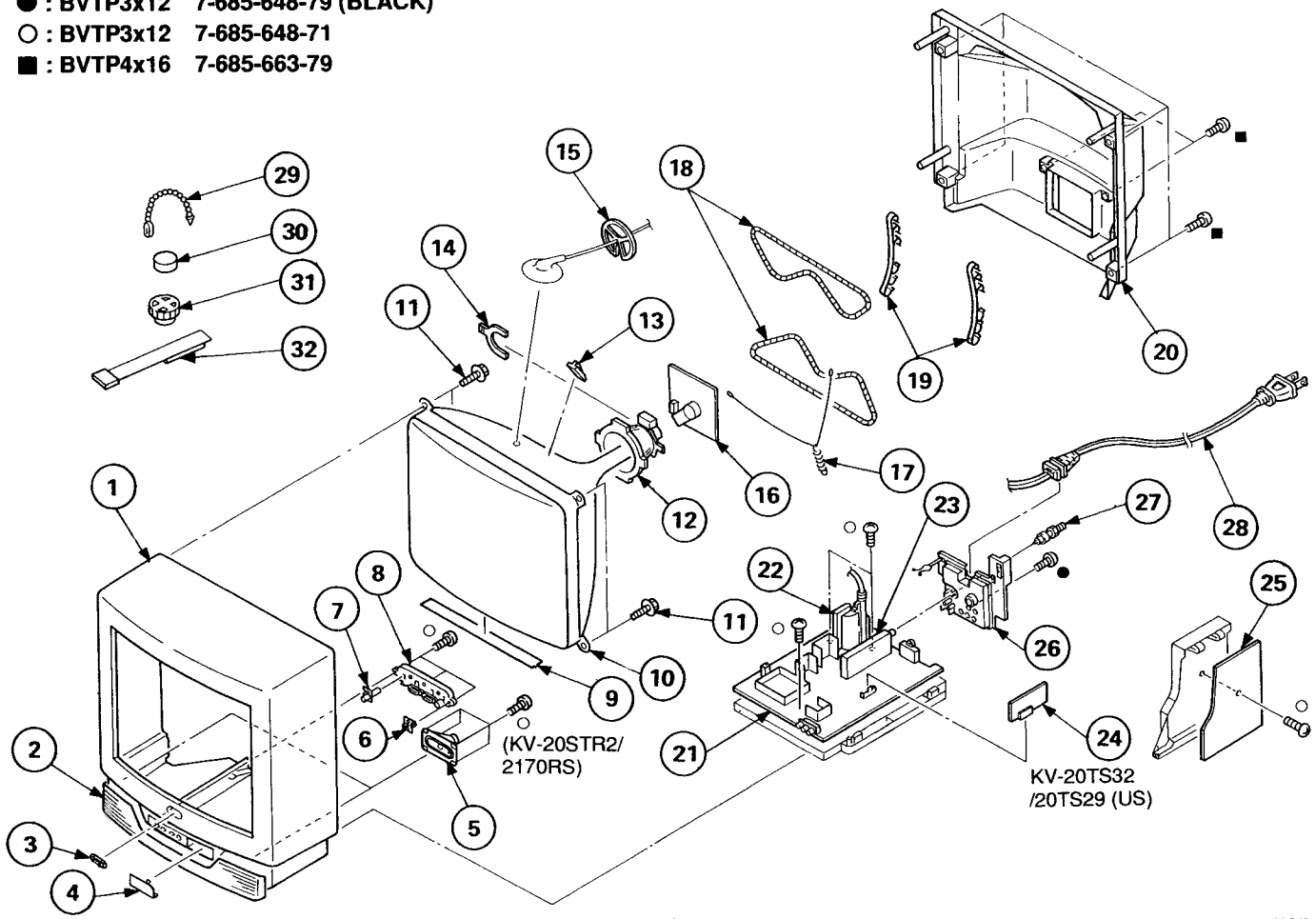
NOTE:
- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.

## 7-1. CHASSIS

● : BVTP3x12 7-685-648-79 (BLACK)
○ : BVTP3x12 7-685-648-71
■ : BVTP4x16 7-685-663-79




| REF.NO. | PART NO. | DESCRIPTION | REMARK |
|---|---|---|---|
| 1 | 4-039-602-01 | CABINET (WITH BEZEL) | |
| 2 | X-4030-982-1 | GRILLE ASSY, SPEAKER | |
| 3 | 4-394-072-01 | EMBLEM (NO.8), SONY | |
| 4 | 4-039-576-01 | PANEL (KV-20TS29(U/C),21STR2,2170RS) | |
| | 4-039-596-01 | DOOR, CONTROL (KV-20TS32) | |
| 5 | 1-504-252-11 | SPEAKER (9X5CM) | |
| 6 | 4-039-594-01 | GUIDE, LED | |
| 7 | 4-039-589-01 | FILTER, REMOTE | |
| 8 | 4-039-595-01 | BUTTON, MULTI | |
| 9 | 4-385-725-01 | SHEET, BLOTTING | |
| 10 | ⚠ 8-738-764-05 | PICTURE TUBE (A51JUH51X) | |
| 11 | 4-365-808-01 | SCREW (5), TAPPING | |
| 12 | ⚠ 1-451-280-11 | DEFLECTION YOKE (Y21PXA2) | |
| 13 | 3-704-495-01 | SPACER, DY | |
| 14 | 1-452-277-00 | MAGNET, BMC | |
| 15 | *3-704-372-01 | HOLDER, HV CABLE | |
| 16 | *A-1331-246-A | C BOARD, COMPLETE | |
| 17 | *4-375-394-01 | SPRING, TENSION | |
| 18 | ⚠ 1-426-358-11 | COIL, DEMAGNETIZATION (KV-20TS29(U/C),20TS32,2170RS) | |
| | ⚠ 1-426-368-11 | COIL, DEMAGNETIZATION (KV-21STR2) | |
| 19 | *4-369-319-00 | BAND, COIL | |
| 20 | 4-039-603-01 | COVER, REAR | |
| 21 | *A-1297-070-A | A BOARD, COMPLETE (KV-20TS29(U/C),21STR2,2170RS) | |
| | *A-1297-058-A | A BOARD, COMPLETE (KV-20TS32) | |
| 22 | ⚠ 1-453-141-11 | TRANSFORMER ASSY, FLYBACK (NX-1600A5) | |
| 23 | ⚠ 8-598-039-01 | TUNER BTF-WA401 | |
| 24 | *1-646-641-11 | S BOARD (KV-20TS29(U),S0TS32) | |
| 25 | *A-1316-146-A | G BOARD, COMPLETE (KV-20TS29(U/C),20TS32,2170RS) | |
| | *A-1316-148-A | G BOARD, COMPLETE (KV-21STR2) | |
| 26 | 4-039-601-01 | TERMINAL BOARD, ANTENNA | |
| 27 | 1-573-657-11 | PLUG, F-PIN | |
| 28 | ⚠ 1-751-057-11 | CORD, POWER (WITH CONNECTOR) (KV-20TS29(U/C),20TS32,2170RS) | |
| | ⚠ 1-751-056-11 | CORD, POWER (WITH CONNECTOR) (KV-21STR2) | |
| 29 | 4-308-870-00 | CLIP, LEAD WIRE | |
| 30 | 1-452-032-00 | MAGNET, DISK; 10MM ϕ | |
| 31 | 1-452-094-00 | MAGNET, ROTATABLE DISK; 15MM ϕ | |
| 32 | X-4308-815-0 | PERMALLOY ASSY, CONVERGENCE | |

# SECTION 8
# ELECTRICAL PARTS LIST

**A** (KV-20TS29/21STR2/2170RS)

NOTE:

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.

- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

RESISTORS
- All resistors are in ohms
- F: nonflammable

When indicating parts by reference number, please include the board name.

CAPACITORS
- MF: µF, PF: µµF

COILS
- MMH: mH, UH: µH

- The components identified by ⊠ in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation.
Should replacement be required, replace only with the value originally used.

| REF.NO. | PART NO. | DESCRIPTION | | | REMARK |
|---|---|---|---|---|---|
| | *A-1297-070-A | A BOARD, COMPLETE ********** (KV-20TS29(U/C),21STR2,2170RS) | | | |
| | 4-382-854-11 | SCREW (M3X10), P, SW (+) | | | |
| | | <CAPACITOR> | | | |
| C002 | 1-163-809-11 | CERAMIC CHIP 0.047MF | 10% | 25V | |
| C003 | 1-163-125-00 | CERAMIC CHIP 220PF | 5% | 50V | |
| C007 | 1-124-903-11 | ELECT 1MF | 20% | 50V | |
| C011 | 1-163-009-11 | CERAMIC CHIP 0.001MF | 10% | 50V | |
| C012 | 1-163-009-11 | CERAMIC CHIP 0.001MF | 10% | 50V | |
| C013 | 1-163-009-11 | CERAMIC CHIP 0.001MF | 10% | 50V | |
| C014 | 1-163-009-11 | CERAMIC CHIP 0.001MF | 10% | 50V | |
| C015 | 1-163-009-11 | CERAMIC CHIP 0.001MF | 10% | 50V | |
| C016 | 1-163-009-11 | CERAMIC CHIP 0.001MF | 10% | 50V | |
| C017 | 1-163-009-11 | CERAMIC CHIP 0.001MF | 10% | 50V | |
| C018 | 1-163-009-11 | CERAMIC CHIP 0.001MF | 10% | 50V | |
| C019 | 1-163-009-11 | CERAMIC CHIP 0.001MF | 10% | 50V | |
| C020 | 1-163-009-11 | CERAMIC CHIP 0.001MF | 10% | 50V | |
| C030 | 1-163-125-00 | CERAMIC CHIP 220PF | 5% | 50V | |
| C039 | 1-163-125-00 | CERAMIC CHIP 220PF | 5% | 50V | |
| C040 | 1-163-125-00 | CERAMIC CHIP 220PF | 5% | 50V | |
| C041 | 1-163-009-11 | CERAMIC CHIP 0.001MF | 10% | 50V | |
| C043 | 1-163-159-00 | CERAMIC CHIP 12PF | 2% | 50V | |
| C045 | 1-126-103-11 | ELECT 470MF | 20% | 16V | |
| C046 | 1-163-017-00 | CERAMIC CHIP 0.0047MF | 10% | 50V | |
| C047 | 1-104-896-91 | CERAMIC CHIP 24PF | 2% | 50V | |
| C048 | 1-216-049-00 | METAL GLAZE 1K 5% | 1/10W | | |
| C049 | 1-163-125-00 | CERAMIC CHIP 220PF | 5% | 50V | |
| C050 | 1-163-109-00 | CERAMIC CHIP 47PF | 5% | 50V | |
| C051 | 1-163-125-00 | CERAMIC CHIP 220PF | 5% | 50V | |
| C052 | 1-163-125-00 | CERAMIC CHIP 220PF | 5% | 50V | |
| C053 | 1-163-121-00 | CERAMIC CHIP 150PF | 5% | 50V | |
| C054 | 1-163-253-11 | CERAMIC CHIP 120PF | 5% | 50V | |
| C055 | 1-163-125-00 | CERAMIC CHIP 220PF | 5% | 50V | |
| C056 | 1-163-125-00 | CERAMIC CHIP 220PF | 5% | 50V | |
| C057 | 1-163-125-00 | CERAMIC CHIP 220PF | 5% | 50V | |
| C058 | 1-163-037-11 | CERAMIC CHIP 0.022MF | 10% | 25V | |
| C059 | 1-163-125-00 | CERAMIC CHIP 220PF | 5% | 50V | |
| C060 | 1-124-903-11 | ELECT 1MF | 20% | 50V | |
| C062 | 1-124-907-11 | ELECT 10MF | 20% | 50V | |
| C064 | 1-124-122-11 | ELECT 100MF | 20% | 50V | |
| C066 | 1-124-903-11 | ELECT 1MF | 20% | 50V | |
| C068 | 1-124-927-11 | ELECT 4.7MF | 20% | 50V | |
| C101 | 1-124-907-11 | ELECT 10MF | 20% | 50V | |
| C201 | 1-124-120-11 | ELECT 220MF | 20% | 16V | |
| C202 | 1-124-907-11 | ELECT 10MF | 20% | 50V | |
| C203 | 1-124-477-11 | ELECT 47MF | 20% | 16V | |
| C204 | 1-126-101-11 | ELECT 100MF | 20% | 16V | |
| C206 | 1-163-009-11 | CERAMIC CHIP 0.001MF | 10% | 50V | |
| C251 | 1-124-925-11 | ELECT 2.2MF | 20% | 50V | |
| C254 | 1-126-101-11 | ELECT 100MF | 20% | 16V | |
| C255 | 1-124-916-11 | ELECT 22MF | 20% | 25V | |
| C256 | 1-126-101-11 | ELECT 100MF | 20% | 16V | |
| C257 | 1-124-925-11 | ELECT 2.2MF | 20% | 50V | |
| C258 | 1-136-169-00 | FILM 0.22MF | 5% | 50V | |
| C259 | 1-136-173-00 | FILM 0.47MF | 5% | 50V | |
| C260 | 1-124-907-11 | ELECT 10MF | 20% | 50V | |
| C261 | 1-124-556-11 | ELECT 2200MF | 20% | 16V | |
| C262 | 1-124-925-11 | ELECT 2.2MF | 20% | 50V | |
| C263 | 1-136-169-00 | FILM 0.22MF | 5% | 50V | |
| C272 | 1-126-103-11 | ELECT 470MF | 20% | 16V | |
| C273 | 1-126-103-11 | ELECT 470MF | 20% | 16V | |
| C301 | 1-163-113-00 | CERAMIC CHIP 68PF | 5% | 50V | |
| C304 | 1-124-907-11 | ELECT 10MF | 20% | 50V | |
| C305 | 1-124-903-11 | ELECT 1MF | 20% | 50V | |
| C306 | 1-163-035-00 | CERAMIC CHIP 0.047MF | | 50V | |
| C307 | 1-163-125-00 | CERAMIC CHIP 220PF | 5% | 50V | |
| C308 | 1-124-902-00 | ELECT 0.47MF | 20% | 50V | |
| C309 | 1-163-099-00 | CERAMIC CHIP 18PF | 5% | 50V | |
| C310 | 1-124-916-11 | ELECT 22MF | 20% | 25V | |
| C311 | 1-137-399-11 | FILM 0.1MF | 5% | 50V | |
| C312 | 1-137-399-11 | FILM 0.1MF | 5% | 50V | |
| C313 | 1-137-399-11 | FILM 0.1MF | 5% | 50V | |
| C314 | 1-163-037-11 | CERAMIC CHIP 0.022MF | 10% | 25V | |
| C315 | 1-124-120-11 | ELECT 220MF | 20% | 16V | |
| C318 | 1-163-117-00 | CERAMIC CHIP 100PF | 5% | 50V | |
| C319 | 1-124-902-00 | ELECT 0.47MF | 20% | 50V | |
| C320 | 1-163-017-00 | CERAMIC CHIP 0.0047MF | 10% | 50V | |
| C321 | 1-163-005-11 | CERAMIC CHIP 470PF | 10% | 50V | |
| C322 | 1-163-011-11 | CERAMIC CHIP 0.0015MF | 10% | 50V | |
| C323 | 1-163-007-11 | CERAMIC CHIP 680PF | 10% | 50V | |
| C324 | 1-124-903-11 | ELECT 1MF | 20% | 50V | |
| C325 | 1-164-232-11 | CERAMIC CHIP 0.01MF | 10% | 50V | |
| C326 | 1-124-903-11 | ELECT 1MF | 20% | 50V | |
| C327 | 1-102-244-00 | CERAMIC 220PF | 10% | 500V | |
| C328 | 1-124-902-00 | ELECT 0.47MF | 20% | 50V | |
| C329 | 1-124-925-11 | ELECT 2.2MF | 20% | 50V | |
| C330 | 1-163-007-11 | CERAMIC CHIP 680PF | 10% | 50V | |
| C332 | 1-136-169-00 | FILM 0.22MF | 5% | 50V | |
| C333 | 1-136-169-00 | FILM 0.22MF | 5% | 50V | |
| C334 | 1-163-037-11 | CERAMIC CHIP 0.022MF | 10% | 25V | |
| C335 | 1-124-903-11 | ELECT 1MF | 20% | 50V | |
| C336 | 1-124-907-11 | ELECT 10MF | 20% | 50V | |
| C340 | 1-126-101-11 | ELECT 100MF | 20% | 16V | |
| C341 | 1-124-903-11 | ELECT 1MF | 20% | 50V | |
| C342 | 1-163-033-00 | CERAMIC CHIP 0.022MF | | 50V | |
| C345 | 1-124-477-11 | ELECT 47MF | 20% | 16V | |
| C347 | 1-126-101-11 | ELECT 100MF | 20% | 16V | |
| C403 | 1-124-907-11 | ELECT 10MF | 20% | 50V | |
| C404 | 1-124-903-11 | ELECT 1MF | 20% | 50V | |

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

## A (KV-20TS29/21STR2/2170RS)

| REF.NO. | PART NO. | DESCRIPTION | | | | REMARK |
|---|---|---|---|---|---|---|
| C405 | 1-124-903-11 | ELECT | 1MF | 20% | 50V | |
| C413 | 1-124-907-11 | ELECT | 10MF | 20% | 50V | |
| C418 | 1-124-903-11 | ELECT | 1MF | 20% | 50V | |
| C419 | 1-124-903-11 | ELECT | 1MF | 20% | 50V | |
| C420 | 1-124-907-11 | ELECT | 10MF | 20% | 50V | |
| C421 | 1-124-907-11 | ELECT | 10MF | 20% | 50V | |
| C422 | 1-126-103-11 | ELECT | 470MF | 20% | 16V | |
| C423 | 1-124-907-11 | ELECT | 10MF | 20% | 50V | |
| C424 | 1-124-925-11 | ELECT | 2.2MF | 20% | 50V | |
| C425 | 1-124-925-11 | ELECT | 2.2MF | 20% | 50V | |
| C440 | 1-126-101-11 | ELECT | 100MF | 20% | 16V | |
| C461 | 1-124-907-11 | ELECT | 10MF | 20% | 50V | |
| C501 | 1-124-902-00 | ELECT | 0.47MF | 20% | 50V | |
| C502 | 1-124-916-11 | ELECT | 22MF | 20% | 50V | |
| C504 | 1-130-489-00 | FILM | 0.033MF | 5% | 50V | |
| C505 | 1-164-058-11 | CERAMIC | 33PF | 5% | 50V | |
| C506 | 1-124-916-11 | ELECT | 22MF | 20% | 50V | |
| C507 | 1-102-038-00 | CERAMIC | 0.001MF | | 500V | |
| C508 | 1-102-038-00 | CERAMIC | 0.001MF | | 500V | |
| C509 | 1-124-122-11 | ELECT | 100MF | 20% | 35V | |
| C510 | 1-137-421-91 | FILM | 0.068MF | 10% | 100V | |
| C511 ⚠ | 1-108-421-91 | MYLAR | 0.01MF | 10% | 200V | |
| C512 | 1-164-096-11 | CERAMIC | 0.01MF | | 50V | |
| C513 | 1-124-903-11 | ELECT | 1MF | 20% | 50V | |
| C514 | 1-124-903-11 | ELECT | 1MF | 20% | 50V | |
| C515 | 1-124-480-11 | ELECT | 470MF | 20% | 25V | |
| C516 | 1-102-244-00 | CERAMIC | 220PF | 10% | 500V | |
| C517 | 1-162-114-00 | CERAMIC | 0.0047MF | | 2KV | |
| C518 | 1-124-480-11 | ELECT | 470MF | 20% | 25V | |
| C519 | 1-102-244-00 | CERAMIC | 220PF | 10% | 500V | |
| C520 | 1-124-046-00 | ELECT | 10MF | 20% | 160V | |
| C521 | 1-102-244-00 | CERAMIC | 220PF | 10% | 500V | |
| C522 | 1-123-024-21 | ELECT | 33MF | | 160V | |
| C523 | 1-123-932-00 | ELECT | 4.7MF | 20% | 160V | |
| C524 | 1-124-477-11 | ELECT | 47MF | 20% | 16V | |
| C525 | 1-106-387-00 | MYLAR | 0.068MF | 10% | 200V | |
| C526 | 1-124-916-11 | ELECT | 22MF | 20% | 25V | |
| C528 | 1-124-046-00 | ELECT | 10MF | 20% | 160V | |
| C553 | 1-102-228-00 | CERAMIC | 470PF | 10% | 500V | |
| C554 ⚠ | 1-162-134-91 | CERAMIC | 470PF | 10% | 2KV | |
| C555 ⚠ | 1-104-750-91 | FILM | 0.033MF | 5% | 400V | |
| C556 ⚠ | 1-136-080-11 | FILM | 0.011MF | 3% | 2KV | |
| C557 | 1-162-116-00 | CERAMIC | 680PF | 10% | 2KV | |
| C558 | 1-137-417-91 | FILM | 0.015MF | 10% | 100V | |
| C559 | 1-162-116-00 | CERAMIC | 680PF | 10% | 2KV | |
| C562 | 1-102-228-00 | CERAMIC | 470PF | 10% | 500V | |
| C564 | 1-136-111-00 | FILM | 1MF | 5% | 200V | |
| C568 | 1-124-634-11 | ELECT | 1MF | 20% | 250V | |
| C571 | 1-124-927-11 | ELECT | 4.7MF | 20% | 50V | |
| C574 | 1-136-569-11 | FILM | 1.2MF | 5% | 200V | |
| C575 | 1-106-371-00 | MYLAR | 0.015MF | | 200V | |
| C590 | 1-163-009-11 | CERAMIC CHIP | 0.001MF | 10% | 50V | |
| C682 | 1-124-477-11 | ELECT | 47MF | 20% | 16V | |
| C683 | 1-124-478-11 | ELECT | 100MF | 20% | 25V | |
| C684 | 1-124-477-11 | ELECT | 47MF | 20% | 16V | |
| C686 | 1-124-477-11 | ELECT | 47MF | 20% | 16V | |
| C690 | 1-124-902-00 | ELECT | 0.47MF | 20% | 50V | |
| C691 | 1-124-120-11 | ELECT | 220MF | 20% | 25V | |
| C692 | 1-124-477-11 | ELECT | 47MF | 20% | 16V | |

<CONNECTOR>

| | | | |
|---|---|---|---|
| CN101 | *1-573-978-11 | CONNECTOR, BOARD TO BOARD 11P | |
| CN102 | *1-560-124-00 | PLUG, CONNECTOR (2.5MM) 4P | |
| CN201 | *1-564-505-11 | PLUG, CONNECTOR 2P | |
| CN202 | *1-564-505-11 | PLUG, CONNECTOR 2P | |
| CN203 | *1-560-123-00 | PLUG, CONNECTOR (2.5MM) 3P | |
| CN301 | *1-564-509-11 | PLUG, CONNECTOR 6P | |
| CN501 | *1-580-798-11 | CONNECTOR PIN (DY) 6P | |
| CN502 | *1-508-768-00 | PIN, CONNECTOR (5MM PITCH) 6P | |
| CN651 | *1-691-135-11 | PIN, CONNECTOR (PC BOARD) 4P | |
| CN652 | *1-564-510-11 | PLUG, CONNECTOR 7P | |

<DIODE>

| | | | |
|---|---|---|---|
| D002 | 8-719-911-19 | DIODE 1SS119 | |
| D003 | 8-719-911-19 | DIODE 1SS119 | |
| D004 | 8-719-911-19 | DIODE 1SS119 | |
| D005 | 8-713-300-57 | DIODE 1T33 | |
| D006 | 8-719-911-19 | DIODE 1SS119 | |
| D009 | 8-719-911-19 | DIODE 1SS119 | |
| D101 | 1-810-039-11 | LED UNIT | |
| D201 | 8-719-110-72 | DIODE RD30ES-B2 | |
| D251 | 8-719-911-19 | DIODE 1SS119 | |
| D252 | 8-719-911-19 | DIODE 1SS119 | |
| D302 | 8-719-109-84 | DIODE RD5.1ES-B1 | |
| D403 | 8-719-110-36 | DIODE RD13ES-B2 | |
| D404 | 8-719-110-36 | DIODE RD13ES-B2 | |
| D405 | 8-719-110-36 | DIODE RD13ES-B2 | |
| D418 | 8-719-936-82 | DIODE GP08DPKG3 | |
| D501 | 8-719-911-19 | DIODE 1SS119 | |
| D502 | 8-719-936-82 | DIODE GP08DPKG3 | |
| D504 | 8-719-936-84 | DIODE RGP10GPKG3 | |
| D507 | 8-719-911-19 | DIODE 1SS119 | |
| D509 | 8-719-936-84 | DIODE RGP10GPKG3 | |
| D511 ⚠ | 8-719-302-43 | DIODE EL1Z | |
| D512 | 8-719-936-84 | DIODE RGP10GPKG3 | |
| D513 | 8-719-976-64 | DIODE RGP02-17 | |
| D551 | 8-719-979-85 | DIODE EGP20G | |
| D552 | 8-719-945-80 | DIODE ERC06-15S | |
| D681 | 8-719-109-90 | DIODE RD5.6ES-B3 | |

<IC>

| | | | |
|---|---|---|---|
| IC101 | 8-752-841-16 | IC CXP80424-065S | |
| IC102 | 8-759-043-86 | IC ST24C02AB1 | |
| IC103 | 8-741-100-62 | IC SBX1618-51 | |
| IC251 | 8-759-980-43 | IC TDA2009A | |
| IC301 | 8-752-059-67 | IC CXA1465AS | |
| IC401 | 8-759-634-69 | IC M52470P | |
| IC404 | 8-759-069-14 | IC M51132L | |
| IC501 | 8-759-801-98 | IC LA7830 | |
| IC502 | 8-759-996-43 | IC RC4558PS | |
| IC681 | 8-759-701-79 | IC NJM7812FA | |
| IC682 | 8-759-982-10 | IC RC7809FA | |
| IC690 | 8-759-805-37 | IC L78LR05D-MA | |

<JACK>

| | | | |
|---|---|---|---|
| J402 | 1-750-278-11 | JACK BLOCK, PIN 3P | |

<COIL>

| | | | |
|---|---|---|---|
| L001 | 1-410-470-11 | INDUCTOR | 10UH |
| L002 | 1-410-476-11 | INDUCTOR | 33UH |
| L003 | 1-410-470-11 | INDUCTOR | 10UH |
| L201 | 1-410-645-31 | INDUCTOR | 100UH |
| L202 | 1-408-408-00 | INDUCTOR | 8.2UH |

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.

**A (KV-20TS29/21STR2/2170RS)**

| REF.NO. | PART NO. | DESCRIPTION | REMARK |
|---|---|---|---|
| L502 | 1-410-669-31 | INDUCTOR 33UH | |
| L503 ⚠ | 1-412-531-61 | INDUCTOR 33UH | |
| L551 | 1-412-533-61 | INDUCTOR 47UH | |
| L555 | 1-422-613-11 | COIL, AIR CORE | |
| L556 ⚠ | 1-459-769-13 | COIL, HORIZONTAL LINEARITY | |
| L557 | 1-412-553-61 | INDUCTOR 3.3MMH | |
| L560 | 1-459-104-00 | COIL, WITH CORE | |
| L561 ⚠ | 1-459-390-31 | COIL (WITH CORE) | |
| | | <MODULE> | |
| PM501 | 1-810-040-11 | PROTECTOR MODULE PM-35 | |
| | | <IC LINK> | |
| PS201 ⚠ | 1-532-675-91 | LINK, IC 1.5A | |
| | | <TRANSISTOR> | |
| Q001 | 8-729-422-36 | TRANSISTOR 2SB709A-Q | |
| Q004 | 8-729-422-36 | TRANSISTOR 2SB709A-Q | |
| Q005 | 8-729-422-27 | TRANSISTOR 2SD601A-Q | |
| Q007 | 8-729-422-27 | TRANSISTOR 2SD601A-Q | |
| Q261 | 8-729-422-36 | TRANSISTOR 2SB709A-Q | |
| Q262 | 8-729-422-27 | TRANSISTOR 2SD601A-Q | |
| Q301 | 8-729-422-36 | TRANSISTOR 2SB709A-Q | |
| Q309 | 8-729-422-27 | TRANSISTOR 2SD601A-Q | |
| Q310 | 8-729-422-27 | TRANSISTOR 2SD601A-Q | |
| Q311 | 8-729-422-27 | TRANSISTOR 2SD601A-Q | |
| Q401 | 8-729-422-36 | TRANSISTOR 2SB709A-Q | |
| Q402 | 8-729-422-36 | TRANSISTOR 2SB709A-Q | |
| Q501 | 8-729-422-27 | TRANSISTOR 2SD601A-Q | |
| Q550 | 8-729-140-50 | TRANSISTOR 2SC3209LK | |
| Q551 | 8-729-821-87 | TRANSISTOR 2SD1878-CA | |
| Q553 | 8-729-019-01 | TRANSISTOR 2SD2394-EF | |
| Q681 | 8-729-378-84 | TRANSISTOR 2SD788-5 | |
| | | <RESISTOR> | |
| R001 | 1-216-073-00 | METAL GLAZE 10K 5% 1/10W | |
| R003 | 1-216-045-00 | METAL GLAZE 680 5% 1/10W | |
| R004 | 1-216-033-00 | METAL GLAZE 220 5% 1/10W | |
| R005 | 1-216-033-00 | METAL GLAZE 220 5% 1/10W | |
| R006 | 1-216-073-00 | METAL GLAZE 10K 5% 1/10W | |
| R008 | 1-216-033-00 | METAL GLAZE 220 5% 1/10W | |
| R009 | 1-216-057-00 | METAL GLAZE 2.2K 5% 1/10W | |
| R010 | 1-216-033-00 | METAL GLAZE 220 5% 1/10W | |
| R011 | 1-216-033-00 | METAL GLAZE 220 5% 1/10W | |
| R012 | 1-216-033-00 | METAL GLAZE 220 5% 1/10W | |
| R016 | 1-216-033-00 | METAL GLAZE 220 5% 1/10W | |
| R017 | 1-216-033-00 | METAL GLAZE 220 5% 1/10W | |
| R018 | 1-216-033-00 | METAL GLAZE 220 5% 1/10W | |
| R019 | 1-216-061-00 | METAL GLAZE 3.3K 5% 1/10W | |
| R020 | 1-216-073-00 | METAL GLAZE 10K 5% 1/10W | |
| R021 | 1-216-073-00 | METAL GLAZE 10K 5% 1/10W | |
| R022 | 1-216-073-00 | METAL GLAZE 10K 5% 1/10W | |
| R023 | 1-216-033-00 | METAL GLAZE 220 5% 1/10W | |
| R025 | 1-216-039-00 | METAL GLAZE 390 5% 1/10W | |
| R026 | 1-216-097-00 | METAL GLAZE 100K 5% 1/10W | |
| R027 | 1-216-121-00 | METAL GLAZE 1M 5% 1/10W | |
| R028 | 1-216-073-00 | METAL GLAZE 10K 5% 1/10W | |
| R029 | 1-216-065-00 | METAL GLAZE 4.7K 5% 1/10W | |
| R030 | 1-216-073-00 | METAL GLAZE 10K 5% 1/10W | |
| R031 | 1-216-025-00 | METAL GLAZE 100 5% 1/10W | |
| R032 | 1-216-025-00 | METAL GLAZE 100 5% 1/10W | |
| R033 | 1-216-025-00 | METAL GLAZE 100 5% 1/10W | |
| R034 | 1-216-025-00 | METAL GLAZE 100 5% 1/10W | |
| R035 | 1-216-041-00 | METAL GLAZE 470 5% 1/10W | |
| R036 | 1-216-033-00 | METAL GLAZE 220 5% 1/10W | |
| R037 | 1-216-033-00 | METAL GLAZE 220 5% 1/10W | |
| R038 | 1-216-033-00 | METAL GLAZE 220 5% 1/10W | |
| R040 | 1-216-033-00 | METAL GLAZE 220 5% 1/10W | |
| R041 | 1-216-033-00 | METAL GLAZE 220 5% 1/10W | |
| R042 | 1-216-295-00 | METAL GLAZE 0 5% 1/10W | |
| R043 | 1-216-295-00 | METAL GLAZE 0 5% 1/10W | |
| R044 | 1-216-065-00 | METAL GLAZE 4.7K 5% 1/10W | |
| R045 | 1-216-065-00 | METAL GLAZE 4.7K 5% 1/10W | |
| R046 | 1-216-065-00 | METAL GLAZE 4.7K 5% 1/10W | |
| R047 | 1-216-049-00 | METAL GLAZE 1K 5% 1/10W | |
| R048 | 1-216-073-00 | METAL GLAZE 10K 5% 1/10W | |
| R049 | 1-216-025-00 | METAL GLAZE 100 5% 1/10W | |
| R050 | 1-216-049-00 | METAL GLAZE 1K 5% 1/10W | |
| R051 | 1-216-073-00 | METAL GLAZE 10K 5% 1/10W | |
| R052 | 1-216-065-00 | METAL GLAZE 4.7K 5% 1/10W | |
| R054 | 1-216-049-00 | METAL GLAZE 1K 5% 1/10W | |
| R055 | 1-216-073-00 | METAL GLAZE 10K 5% 1/10W | |
| R056 | 1-216-065-00 | METAL GLAZE 4.7K 5% 1/10W | |
| R057 | 1-216-065-00 | METAL GLAZE 4.7K 5% 1/10W | |
| R059 | 1-216-065-00 | METAL GLAZE 4.7K 5% 1/10W | |
| R061 | 1-216-065-00 | METAL GLAZE 4.7K 5% 1/10W | |
| R062 | 1-216-069-00 | METAL GLAZE 6.8K 5% 1/10W | |
| R063 | 1-216-065-00 | METAL GLAZE 4.7K 5% 1/10W | |
| R064 | 1-216-065-00 | METAL GLAZE 4.7K 5% 1/10W | |
| R065 | 1-216-065-00 | METAL GLAZE 4.7K 5% 1/10W | |
| R066 | 1-216-295-00 | METAL GLAZE 0 5% 1/10W | |
| R067 | 1-216-295-00 | METAL GLAZE 0 5% 1/10W | |
| R069 | 1-216-295-00 | METAL GLAZE 0 5% 1/10W | |
| R071 | 1-216-047-00 | METAL GLAZE 820 5% 1/10W | |
| R073 | 1-216-079-00 | METAL GLAZE 18K 5% 1/10W | |
| R074 | 1-216-049-00 | METAL GLAZE 1K 5% 1/10W | |
| R075 | 1-216-073-00 | METAL GLAZE 10K 5% 1/10W | |
| R078 | 1-249-429-11 | CARBON 10K 5% 1/4W | |
| R079 | 1-216-295-00 | METAL GLAZE 0 5% 1/10W | |
| R080 | 1-216-073-00 | METAL GLAZE 10K 5% 1/10W | |
| R081 | 1-216-073-00 | METAL GLAZE 10K 5% 1/10W | |
| R082 | 1-216-055-00 | METAL GLAZE 1.8K 5% 1/10W | |
| R083 | 1-249-437-11 | CARBON 47K 5% 1/4W | |
| R084 | 1-216-093-00 | METAL GLAZE 68K 5% 1/10W | |
| R085 | 1-216-065-00 | METAL GLAZE 4.7K 5% 1/10W | |
| R086 | 1-216-295-00 | METAL GLAZE 0 5% 1/10W | |
| R088 | 1-216-089-00 | METAL GLAZE 47K 5% 1/10W | |
| R089 | 1-216-041-00 | METAL GLAZE 470 5% 1/10W | |
| R091 | 1-216-089-00 | METAL GLAZE 47K 5% 1/10W | |
| R092 | 1-216-073-00 | METAL GLAZE 10K 5% 1/10W | |
| R093 | 1-216-049-00 | METAL GLAZE 1K 5% 1/10W | |
| R095 | 1-216-033-00 | METAL GLAZE 220 5% 1/10W | |
| R096 | 1-216-033-00 | METAL GLAZE 220 5% 1/10W | |
| R097 | 1-216-033-00 | METAL GLAZE 220 5% 1/10W | |
| R101 | 1-216-073-00 | METAL GLAZE 10K 5% 1/10W | |
| R102 | 1-216-039-00 | METAL GLAZE 390 5% 1/10W | |
| R203 | 1-215-924-00 | METAL OXIDE 15K 5% 3W F | |
| R206 | 1-216-689-11 | METAL GLAZE 39K 5% 1/10W | |
| R207 | 1-216-083-00 | METAL GLAZE 27K 5% 1/10W | |
| R251 | 1-216-059-00 | METAL GLAZE 2.7K 5% 1/10W | |
| R252 | 1-216-059-00 | METAL GLAZE 2.7K 5% 1/10W | |
| R253 | 1-216-061-00 | METAL GLAZE 3.3K 5% 1/10W | |
| R254 | 1-216-015-00 | METAL GLAZE 39 5% 1/10W | |

• The components identified by ⊠ in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation.
Should replacement be required, replace only with the value originally used.

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

## A (KV-20TS29/21STR2/2170RS)

| REF.NO. | PART NO. | DESCRIPTION | | | | REMARK |
|---|---|---|---|---|---|---|
| R256 | 1-216-015-00 | METAL GLAZE | 39 | 5% | 1/10W | |
| R257 | 1-216-061-00 | METAL GLAZE | 3.3K | 5% | 1/10W | |
| R258 | 1-216-051-00 | METAL GLAZE | 1.2K | 5% | 1/10W | |
| R259 | 1-216-051-00 | METAL GLAZE | 1.2K | 5% | 1/10W | |
| R262 | 1-216-075-00 | METAL GLAZE | 12K | 5% | 1/10W | |
| R263 | 1-216-075-00 | METAL GLAZE | 12K | 5% | 1/10W | |
| R264 | 1-216-041-00 | METAL GLAZE | 470 | 5% | 1/10W | |
| R265 | 1-216-085-00 | METAL GLAZE | 33K | 5% | 1/10W | |
| R266 | 1-216-085-00 | METAL GLAZE | 33K | 5% | 1/10W | |
| R267 | 1-216-089-00 | METAL GLAZE | 47K | 5% | 1/10W | |
| R268 | 1-216-065-00 | METAL GLAZE | 4.7K | 5% | 1/10W | |
| R269 | 1-249-385-11 | CARBON | 2.2 | 5% | 1/4W | |
| R270 | 1-249-385-11 | CARBON | 2.2 | 5% | 1/4W | |
| R301 | 1-216-065-00 | METAL GLAZE | 4.7K | 5% | 1/10W | |
| R302 | 1-216-057-00 | METAL GLAZE | 2.2K | 5% | 1/10W | |
| R311 | 1-216-678-11 | METAL CHIP | 13K | 0.50% | 1/10W | |
| R312 | 1-216-079-00 | METAL GLAZE | 18K | 5% | 1/10W | |
| R313 | 1-216-653-11 | METAL CHIP | 1.2K | 0.50% | 1/10W | |
| R314 | 1-216-117-00 | METAL GLAZE | 680K | 5% | 1/10W | |
| R315 | 1-216-051-00 | METAL GLAZE | 1.2K | 5% | 1/10W | |
| R319 | 1-216-295-00 | METAL GLAZE | 0 | 5% | 1/10W | |
| R320 | 1-216-295-00 | METAL GLAZE | 0 | 5% | 1/10W | |
| R321 | 1-216-295-00 | METAL GLAZE | 0 | 5% | 1/10W | |
| R322 | 1-216-295-00 | METAL GLAZE | 0 | 5% | 1/10W | |
| R323 | 1-216-121-00 | METAL GLAZE | 1M | 5% | 1/10W | |
| R324 | 1-216-025-00 | METAL GLAZE | 100 | 5% | 1/10W | |
| R326 | 1-216-025-00 | METAL GLAZE | 100 | 5% | 1/10W | |
| R327 | 1-216-077-00 | METAL GLAZE | 15K | 5% | 1/10W | |
| R328 | 1-216-025-00 | METAL GLAZE | 100 | 5% | 1/10W | |
| R329 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R330 | 1-216-067-00 | METAL GLAZE | 5.6K | 5% | 1/10W | |
| R331 | 1-216-093-00 | METAL GLAZE | 68K | 5% | 1/10W | |
| R335 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R336 | 1-216-121-00 | METAL GLAZE | 1M | 5% | 1/10W | |
| R338 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R339 | 1-216-045-00 | METAL GLAZE | 680 | 5% | 1/10W | |
| R341 | 1-216-687-11 | METAL CHIP | 33K | 0.50% | 1/10W | |
| R343 | 1-216-071-00 | METAL GLAZE | 8.2K | 5% | 1/10W | |
| R345 | 1-249-429-11 | CARBON | 10K | 5% | 1/4W | |
| R346 | 1-249-421-11 | CARBON | 2.2K | 5% | 1/4W | |
| R347 | 1-216-025-00 | METAL GLAZE | 100 | 5% | 1/10W | |
| R351 | 1-216-085-00 | METAL GLAZE | 33K | 5% | 1/10W | |
| R356 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R357 | 1-216-089-00 | METAL GLAZE | 47K | 5% | 1/10W | |
| R358 | 1-216-091-00 | METAL GLAZE | 56K | 5% | 1/10W | |
| R360 | 1-216-041-00 | METAL GLAZE | 470 | 5% | 1/10W | |
| R361 | 1-216-025-00 | METAL GLAZE | 100 | 5% | 1/10W | |
| R362 | 1-216-295-00 | METAL GLAZE | 0 | 5% | 1/10W | |
| R363 | 1-216-295-00 | METAL GLAZE | 0 | 5% | 1/10W | |
| R364 | 1-216-295-00 | METAL GLAZE | 0 | 5% | 1/10W | |
| R365 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R367 | 1-216-109-00 | METAL GLAZE | 330K | 5% | 1/10W | |
| R403 | 1-216-022-00 | METAL GLAZE | 75 | 5% | 1/10W | |
| R404 | 1-216-295-00 | METAL GLAZE | 0 | 5% | 1/10W | |
| R405 | 1-216-113-00 | METAL GLAZE | 470K | 5% | 1/10W | |
| R406 | 1-216-113-00 | METAL GLAZE | 470K | 5% | 1/10W | |
| R413 | 1-216-295-00 | METAL GLAZE | 0 | 5% | 1/10W | |
| R414 | 1-216-041-00 | METAL GLAZE | 470 | 5% | 1/10W | |
| R415 | 1-216-041-00 | METAL GLAZE | 470 | 5% | 1/10W | |
| R429 | 1-216-295-00 | METAL GLAZE | 0 | 5% | 1/10W | |
| R430 | 1-216-295-00 | METAL GLAZE | 0 | 5% | 1/10W | |
| R441 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R443 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R444 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R445 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R448 | 1-249-417-11 | CARBON | 1K | 5% | 1/4W | |
| R449 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R450 | 1-216-025-00 | METAL GLAZE | 100 | 5% | 1/10W | |
| R453 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R454 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R456 | 1-216-295-00 | METAL GLAZE | 0 | 5% | 1/10W | |
| R457 | 1-216-295-00 | METAL GLAZE | 0 | 5% | 1/10W | |
| R458 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R459 | 1-216-295-00 | METAL GLAZE | 0 | 5% | 1/10W | |
| R460 | 1-216-295-00 | METAL GLAZE | 0 | 5% | 1/10W | |
| R469 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R471 | 1-216-295-00 | METAL GLAZE | 0 | 5% | 1/10W | |
| R472 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R473 | 1-216-025-00 | METAL GLAZE | 100 | 5% | 1/10W | |
| R474 | 1-216-295-00 | METAL GLAZE | 0 | 5% | 1/10W | |
| R475 | 1-216-025-00 | METAL GLAZE | 100 | 5% | 1/10W | |
| R501 | 1-249-429-11 | CARBON | 10K | 5% | 1/4W | |
| R502 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R505 | 1-216-349-00 | METAL OXIDE | 1 | 5% | 1W | F |
| R506 | 1-216-429-00 | METAL OXIDE | 270 | 5% | 1W | F |
| R507 | 1-247-887-00 | CARBON | 220K | 5% | 1/4W | |
| R508 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R509 | 1-216-101-00 | METAL GLAZE | 150K | 5% | 1/10W | |
| R510 | 1-216-055-00 | METAL GLAZE | 1.8K | 5% | 1/10W | |
| ⊠R511 ⚠ | | METAL | | | 1/4W | |
| R512 | 1-215-445-00 | METAL | 10K | 1% | 1/4W | |
| R513 | 1-216-645-11 | METAL CHIP | 560 | 0.50% | 1/10W | |
| R515 | 1-216-673-11 | METAL CHIP | 8.2K | 0.50% | 1/10W | |
| R517 | 1-216-699-11 | METAL CHIP | 100K | 0.50% | 1/10W | |
| R518 | 1-215-431-00 | METAL | 2.7K | 1% | 1/4W | |
| R519 | 1-215-427-00 | METAL | 1.8K | 1% | 1/4W | |
| R520 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R530 | 1-249-419-11 | CARBON | 1.5K | 5% | 1/4W | |
| R531 | 1 216 357 00 | METAL OXIDE | 4.7 | 5% | 1W | F |
| R532 ⚠ | 1-215-880-91 | METAL OXIDE | 10 | 5% | 2W | F |
| R533 | 1-216-359-00 | METAL OXIDE | 6.8 | 5% | 1W | F |
| R534 | 1-249-393-11 | CARBON | 10 | 5% | 1/4W | F |
| R535 | 1-249-389-11 | CARBON | 4.7 | 5% | 1/4W | F |
| ⊠R537 ⚠ | | METAL | | | 1/4W | |
| R538 | 1-249 441 11 | CARBON | 100K | 5% | 1/4W | |
| R541 | 1-249-418-11 | CARBON | 1.2K | 5% | 1/4W | F |
| R542 | 1-216-357-00 | METAL OXIDE | 4.7 | 5% | 1W | F |
| R549 | 1-216-369-00 | METAL OXIDE | 1 | 5% | 2W | F |
| R554 | 1-216-061-00 | METAL GLAZE | 3.3K | 5% | 1/10W | |
| R555 | 1-215-896-00 | METAL OXIDE | 4.7K | 5% | 2W | F |
| R558 | 1-249-415-11 | CARBON | 680 | 5% | 1/4W | F |
| R559 | 1-215-862-11 | METAL OXIDE | 68 | 5% | 1W | F |
| R565 | 1-249-377-11 | CARBON | 0.47 | 5% | 1/4W | F |
| R566 | 1-249-417-11 | CARBON | 1K | 5% | 1/4W | F |
| R588 | 1-216-105-00 | METAL GLAZE | 220K | 5% | 1/10W | |
| R590 | 1-216-063-00 | METAL GLAZE | 3.9K | 5% | 1/10W | |
| R591 | 1-216-061-00 | METAL GLAZE | 3.3K | 5% | 1/10W | |
| R592 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R593 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R594 | 1-216-689-11 | METAL GLAZE | 39K | 5% | 1/10W | |
| R595 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R599 | 1-215-857-11 | METAL OXIDE | 10 | 5% | 1W | F |
| R681 | 1-215-883-11 | METAL OXIDE | 33 | 5% | 2W | F |
| R682 | 1-249-415-11 | CARBON | 680 | 5% | 1/4W | |
| R683 | 1-216-356-00 | METAL OXIDE | 3.9 | 5% | 1W | F |
| R684 | 1-216-380-11 | METAL OXIDE | 8.2 | 5% | 2W | F |

The components identified by shading and mark ⚠ are critical for safety.
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Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.

**A (KV-20TS29/21STR2/2170RS)** **A (KV-20TS32)**

| REF.NO. | PART NO. | DESCRIPTION | | | REMARK |
|---|---|---|---|---|---|
| | | <SWITCH> | | | |
| S001 | 1-571-532-21 | SWITCH, TACTIL | | | |
| S002 | 1-571-532-21 | SWITCH, TACTIL | | | |
| S003 | 1-571-532-21 | SWITCH, TACTIL | | | |
| S004 | 1-571-532-21 | SWITCH, TACTIL | | | |
| S005 | 1-571-532-21 | SWITCH, TACTIL | | | |
| S006 | 1-571-532-21 | SWITCH, TACTIL | | | |
| | | <SPARK GAP> | | | |
| SG551 | 1-519-422-11 | GAP, SPARK | | | |
| | | <TRANSFORMER> | | | |
| T504 ⚠ | 1-453-141-11 | TRANSFORMER ASSY, FLYBACK (NX-1600A5) | | | |
| T551 | 1-437-195-11 | TRANSFORMER, HORIZONTAL DRIVE | | | |
| | | <TUNER> | | | |
| TU101 ⚠ | 8-598-039-01 | TUNER BTF-WA401 | | | |
| | | <CRYSTAL> | | | |
| X001 | 1-579-917-21 | VIBRATOR, CRYSTAL | | | |
| X301 | 1-567-505-11 | OSCILLATOR, CRYSTAL | | | |
| ********** | | | | | |
| *A-1297-058-A | | A BOARD, COMPLETE (KV-20TS32) | | | |
| | | ********** | | | |
| 4-382-854-11 | | SCREW (M3X10), P, SW (+) | | | |
| | | <CAPACITOR> | | | |
| C002 | 1-163-809-11 | CERAMIC CHIP 0.047MF | 10% | 25V | |
| C003 | 1-163-125-00 | CERAMIC CHIP 220PF | 5% | 50V | |
| C007 | 1-124-903-11 | ELECT 1MF | 20% | 50V | |
| C011 | 1-163-009-11 | CERAMIC CHIP 0.001MF | 10% | 50V | |
| C012 | 1-163-009-11 | CERAMIC CHIP 0.001MF | 10% | 50V | |
| C013 | 1-163-009-11 | CERAMIC CHIP 0.001MF | 10% | 50V | |
| C014 | 1-163-009-11 | CERAMIC CHIP 0.001MF | 10% | 50V | |
| C015 | 1-163-009-11 | CERAMIC CHIP 0.001MF | 10% | 50V | |
| C016 | 1-163-009-11 | CERAMIC CHIP 0.001MF | 10% | 50V | |
| C017 | 1-163-009-11 | CERAMIC CHIP 0.001MF | 10% | 50V | |
| C018 | 1-163-009-11 | CERAMIC CHIP 0.001MF | 10% | 50V | |
| C019 | 1-163-009-11 | CERAMIC CHIP 0.001MF | 10% | 50V | |
| C020 | 1-163-009-11 | CERAMIC CHIP 0.001MF | 10% | 50V | |
| C030 | 1-163-125-00 | CERAMIC CHIP 220PF | 5% | 50V | |
| C039 | 1-163-125-00 | CERAMIC CHIP 220PF | 5% | 50V | |
| C040 | 1-163-125-00 | CERAMIC CHIP 220PF | 5% | 50V | |
| C041 | 1-163-009-11 | CERAMIC CHIP 0.001MF | 10% | 50V | |
| C043 | 1-163-159-00 | CERAMIC CHIP 12PF | 2% | 50V | |
| C045 | 1-126-103-11 | ELECT 470MF | 20% | 16V | |
| C046 | 1-163-017-00 | CERAMIC CHIP 0.0047MF | 10% | 50V | |
| C047 | 1-104-896-91 | CERAMIC CHIP 24PF | 2% | 50V | |
| C048 | 1-216-049-00 | METAL GLAZE 1K 5% | 1/10W | | |
| C049 | 1-163-125-00 | CERAMIC CHIP 220PF | 5% | 50V | |
| C050 | 1-163-109-00 | CERAMIC CHIP 47PF | 5% | 50V | |
| C051 | 1-163-125-00 | CERAMIC CHIP 220PF | 5% | 50V | |
| C052 | 1-163-125-00 | CERAMIC CHIP 220PF | 5% | 50V | |
| C053 | 1-163-121-00 | CERAMIC CHIP 150PF | 5% | 50V | |
| C054 | 1-163-253-11 | CERAMIC CHIP 120PF | 5% | 50V | |
| C055 | 1-163-125-00 | CERAMIC CHIP 220PF | 5% | 50V | |
| C056 | 1-163-125-00 | CERAMIC CHIP 220PF | 5% | 50V | |
| C057 | 1-163-125-00 | CERAMIC CHIP 220PF | 5% | 50V | |
| C058 | 1-163-037-11 | CERAMIC CHIP 0.022MF | 10% | 25V | |
| C059 | 1-163-125-00 | CERAMIC CHIP 220PF | 5% | 50V | |
| C060 | 1-124-903-11 | ELECT 1MF | 20% | 50V | |
| C062 | 1-124-907-11 | ELECT 10MF | 20% | 50V | |
| C064 | 1-124-122-11 | ELECT 100MF | 20% | 50V | |
| C066 | 1-124-903-11 | ELECT 1MF | 20% | 50V | |
| C068 | 1-124-927-11 | ELECT 4.7MF | 20% | 50V | |
| C101 | 1-124-907-11 | ELECT 10MF | 20% | 50V | |
| C201 | 1-124-120-11 | ELECT 220MF | 20% | 16V | |
| C202 | 1-124-907-11 | ELECT 10MF | 20% | 50V | |
| C203 | 1-124-477-11 | ELECT 47MF | 20% | 16V | |
| C204 | 1-126-101-11 | ELECT 100MF | 20% | 16V | |
| C206 | 1-163-009-11 | CERAMIC CHIP 0.001MF | 10% | 50V | |
| C251 | 1-124-925-11 | ELECT 2.2MF | 20% | 50V | |
| C254 | 1-126-101-11 | ELECT 100MF | 20% | 16V | |
| C255 | 1-124-916-11 | ELECT 22MF | 20% | 25V | |
| C256 | 1-126-101-11 | ELECT 100MF | 20% | 16V | |
| C257 | 1-124-925-11 | ELECT 2.2MF | 20% | 50V | |
| C258 | 1-136-169-00 | FILM 0.22MF | 5% | 50V | |
| C259 | 1-136-173-00 | FILM 0.47MF | 5% | 50V | |
| C260 | 1-124-907-11 | ELECT 10MF | 20% | 50V | |
| C261 | 1-124-556-11 | ELECT 2200MF | 20% | 16V | |
| C262 | 1-124-925-11 | ELECT 2.2MF | 20% | 50V | |
| C263 | 1-136-169-00 | FILM 0.22MF | 5% | 50V | |
| C270 | 1-124-907-11 | ELECT 10MF | 20% | 50V | |
| C271 | 1-124-907-11 | ELECT 10MF | 20% | 50V | |
| C272 | 1-126-103-11 | ELECT 470MF | 20% | 16V | |
| C273 | 1-126-103-11 | ELECT 470MF | 20% | 16V | |
| C301 | 1-163-113-00 | CERAMIC CHIP 68PF | 5% | 50V | |
| C304 | 1-124-907-11 | ELECT 10MF | 20% | 50V | |
| C305 | 1-124-903-11 | ELECT 1MF | 20% | 50V | |
| C306 | 1-163-035-00 | CERAMIC CHIP 0.047MF | | 50V | |
| C307 | 1-163-125-00 | CERAMIC CHIP 220PF | 5% | 50V | |
| C308 | 1-124-902-00 | ELECT 0.47MF | 20% | 50V | |
| C309 | 1-163-099-00 | CERAMIC CHIP 18PF | 5% | 50V | |
| C310 | 1-124-916-11 | ELECT 22MF | 20% | 25V | |
| C311 | 1-137-399-11 | FILM 0.1MF | 5% | 50V | |
| C312 | 1-137-399-11 | FILM 0.1MF | 5% | 50V | |
| C313 | 1-137-399-11 | FILM 0.1MF | 5% | 50V | |
| C314 | 1-163-037-11 | CERAMIC CHIP 0.022MF | 10% | 25V | |
| C315 | 1-124-120-11 | ELECT 220MF | 20% | 16V | |
| C318 | 1-163-117-00 | CERAMIC CHIP 100PF | 5% | 50V | |
| C319 | 1-124-902-00 | ELECT 0.47MF | 20% | 50V | |
| C320 | 1-163-017-00 | CERAMIC CHIP 0.0047MF | 10% | 50V | |
| C321 | 1-163-005-11 | CERAMIC CHIP 470PF | 10% | 50V | |
| C322 | 1-163-011-11 | CERAMIC CHIP 0.0015MF | 10% | 50V | |
| C323 | 1-163-007-11 | CERAMIC CHIP 680PF | 10% | 50V | |
| C324 | 1-124-903-11 | ELECT 1MF | 20% | 50V | |
| C325 | 1-164-232-11 | CERAMIC CHIP 0.01MF | 10% | 50V | |
| C326 | 1-124-903-11 | ELECT 1MF | 20% | 50V | |
| C327 | 1-102-244-00 | CERAMIC 220PF | 10% | 500V | |
| C328 | 1-124-902-00 | ELECT 0.47MF | 20% | 50V | |
| C329 | 1-124-925-11 | ELECT 2.2MF | 20% | 50V | |
| C330 | 1-163-007-11 | CERAMIC CHIP 680PF | 10% | 50V | |
| C332 | 1-136-169-00 | FILM 0.22MF | 5% | 50V | |
| C333 | 1-136-169-00 | FILM 0.22MF | 5% | 50V | |
| C334 | 1-163-037-11 | CERAMIC CHIP 0.022MF | 10% | 25V | |
| C335 | 1-124-903-11 | ELECT 1MF | 20% | 50V | |
| C336 | 1-124-907-11 | ELECT 10MF | 20% | 50V | |
| C340 | 1-126-101-11 | ELECT 100MF | 20% | 16V | |

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Ne les remplacer que par une piece portant le numero specifie.

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Replace only with part number specified.

## A (KV-20TS32)

| REF.NO. | PART NO. | DESCRIPTION | | | REMARK |
|---|---|---|---|---|---|
| C341 | 1-124-903-11 | ELECT | 1MF | 20% | 50V |
| C342 | 1-163-033-00 | CERAMIC CHIP | 0.022MF | | 50V |
| C345 | 1-124-477-11 | ELECT | 47MF | 20% | 16V |
| C347 | 1-126-101-11 | ELECT | 100MF | 20% | 16V |
| C401 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | | 50V |
| C402 | 1-124-907-11 | ELECT | 10MF | 20% | 50V |
| C403 | 1-124-907-11 | ELECT | 10MF | 20% | 50V |
| C404 | 1-124-903-11 | ELECT | 1MF | 20% | 50V |
| C405 | 1-124-903-11 | ELECT | 1MF | 20% | 50V |
| C408 | 1-124-907-11 | ELECT | 10MF | 20% | 50V |
| C409 | 1-124-903-11 | ELECT | 1MF | 20% | 50V |
| C410 | 1-124-903-11 | ELECT | 1MF | 20% | 50V |
| C413 | 1-124-907-11 | ELECT | 10MF | 20% | 50V |
| C418 | 1-124-903-11 | ELECT | 1MF | 20% | 50V |
| C419 | 1-124-903-11 | ELECT | 1MF | 20% | 50V |
| C420 | 1-124-907-11 | ELECT | 10MF | 20% | 50V |
| C421 | 1-124-907-11 | ELECT | 10MF | 20% | 50V |
| C422 | 1-126-103-11 | ELECT | 470MF | 20% | 16V |
| C423 | 1-124-907-11 | ELECT | 10MF | 20% | 50V |
| C424 | 1-124-925-11 | ELECT | 2.2MF | 20% | 50V |
| C425 | 1-124-925-11 | ELECT | 2.2MF | 20% | 50V |
| C438 | 1-124-907-11 | ELECT | 10MF | 20% | 50V |
| C439 | 1-124-907-11 | ELECT | 10MF | 20% | 50V |
| C440 | 1-126-101-11 | ELECT | 100MF | 20% | 16V |
| C445 | 1-164-232-11 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C461 | 1-124-907-11 | ELECT | 10MF | 20% | 50V |
| C501 | 1-124-902-00 | ELECT | 0.47MF | 20% | 50V |
| C502 | 1-124-916-11 | ELECT | 22MF | 20% | 50V |
| C504 | 1-130-489-00 | FILM | 0.033MF | 5% | 50V |
| C505 | 1-164-058-11 | CERAMIC | 33PF | 5% | 50V |
| C506 | 1-124-916-11 | ELECT | 22MF | 20% | 50V |
| C507 | 1-102-038-00 | CERAMIC | 0.001MF | | 500V |
| C508 | 1-102-038-00 | CERAMIC | 0.001MF | | 500V |
| C509 | 1-124-122-11 | ELECT | 100MF | 20% | 35V |
| C510 | 1-137-421-91 | FILM | 0.068MF | 10% | 100V |
| C511 ⚠ | 1-108-421-91 | MYLAR | 0.01MF | 10% | 200V |
| C512 | 1-164-096-11 | CERAMIC | 0.01MF | | 50V |
| C513 | 1-124-903-11 | ELECT | 1MF | 20% | 50V |
| C514 | 1-124-903-11 | ELECT | 1MF | 20% | 50V |
| C515 | 1-124-480-11 | ELECT | 470MF | 20% | 25V |
| C516 | 1-102-244-00 | CERAMIC | 220PF | 10% | 500V |
| C517 | 1-162-114-00 | CERAMIC | 0.0047MF | | 2KV |
| C518 | 1-124-480-11 | ELECT | 470MF | 20% | 25V |
| C519 | 1-102-244-00 | CERAMIC | 220PF | 10% | 500V |
| C520 | 1-124-046-00 | ELECT | 10MF | 20% | 160V |
| C521 | 1-102-244-00 | CERAMIC | 220PF | 10% | 500V |
| C522 | 1-123-024-21 | ELECT | 33MF | | 160V |
| C523 | 1-123-932-00 | ELECT | 4.7MF | 20% | 160V |
| C524 | 1-124-477-11 | ELECT | 47MF | 20% | 16V |
| C525 | 1-106-387-00 | MYLAR | 0.068MF | 10% | 200V |
| C526 | 1-124-916-11 | ELECT | 22MF | 20% | 25V |
| C528 | 1-124-046-00 | ELECT | 10MF | 20% | 160V |
| C553 | 1-102-228-00 | CERAMIC | 470PF | 10% | 500V |
| C554 ⚠ | 1-162-134-91 | CERAMIC | 470PF | 10% | 2KV |
| C555 ⚠ | 1-104-750-91 | FILM | 0.033MF | 5% | 400V |
| C556 ⚠ | 1-136-080-11 | FILM | 0.011MF | 3% | 2KV |
| C557 | 1-162-116-00 | CERAMIC | 680PF | 10% | 2KV |
| C558 | 1-137-417-91 | FILM | 0.015MF | 10% | 100V |
| C559 | 1-162-116-00 | CERAMIC | 680PF | 10% | 2KV |
| C562 | 1-102-228-00 | CERAMIC | 470PF | 10% | 500V |
| C564 | 1-136-111-00 | FILM | 1MF | 5% | 200V |
| C568 | 1-124-634-11 | ELECT | 1MF | 20% | 250V |
| C571 | 1-124-927-11 | ELECT | 4.7MF | 20% | 50V |
| C574 | 1-136-569-11 | FILM | 1.2MF | 5% | 200V |
| C575 | 1-106-371-00 | MYLAR | 0.015MF | | 200V |
| C590 | 1-163-009-11 | CERAMIC CHIP | 0.001MF | 10% | 50V |
| C682 | 1-124-477-11 | ELECT | 47MF | 20% | 16V |
| C683 | 1-124-478-11 | ELECT | 100MF | 20% | 25V |
| C684 | 1-124-477-11 | ELECT | 47MF | 20% | 16V |
| C686 | 1-124-477-11 | ELECT | 47MF | 20% | 16V |
| C690 | 1-124-902-00 | ELECT | 0.47MF | 20% | 50V |
| C691 | 1-124-120-11 | ELECT | 220MF | 20% | 25V |
| C692 | 1-124-477-11 | ELECT | 47MF | 20% | 16V |

<CONNECTOR>

| | | | |
|---|---|---|---|
| CN101 | *1-573-978-11 | CONNECTOR, BOARD TO BOARD 11P | |
| CN102 | *1-560-124-00 | PLUG, CONNECTOR (2.5MM) 4P | |
| CN201 | *1-564-505-11 | PLUG, CONNECTOR 2P | |
| CN202 | *1-564-505-11 | PLUG, CONNECTOR 2P | |
| CN203 | *1-560-123-00 | PLUG, CONNECTOR (2.5MM) 3P | |
| CN301 | *1-564-509-11 | PLUG, CONNECTOR 6P | |
| CN501 | *1-580-798-11 | CONNECTOR PIN (DY) 6P | |
| CN502 | *1-508-768-00 | PIN, CONNECTOR (5MM PITCH) 6P | |
| CN651 | *1-691-135-11 | PIN, CONNECTOR (PC BOARD) 4P | |
| CN652 | *1-564-510-11 | PLUG, CONNECTOR 7P | |

<DIODE>

| | | | |
|---|---|---|---|
| D002 | 8-719-911-19 | DIODE 1SS119 | |
| D003 | 8-719-911-19 | DIODE 1SS119 | |
| D004 | 8-719-911-19 | DIODE 1SS119 | |
| D005 | 8-713-300-57 | DIODE 1T33 | |
| D006 | 8-719-911-19 | DIODE 1SS119 | |
| D009 | 8-719-911-19 | DIODE 1SS119 | |
| D101 | 1-810-039-11 | LED UNIT | |
| D201 | 8-719-110-72 | DIODE RD30ES-B2 | |
| D251 | 8-719-911-19 | DIODE 1SS119 | |
| D252 | 8-719-911-19 | DIODE 1SS119 | |
| D302 | 8-719-109-84 | DIODE RD5.1ES-B1 | |
| D401 | 8-719-110-36 | DIODE RD13ES-B2 | |
| D402 | 8-719-110-36 | DIODE RD13ES-B2 | |
| D403 | 8-719-110-36 | DIODE RD13ES-B2 | |
| D404 | 8-719-110-36 | DIODE RD13ES-B2 | |
| D405 | 8-719-110-36 | DIODE RD13ES-B2 | |
| D408 | 8-719-110-36 | DIODE RD13ES-B2 | |
| D409 | 8-719-110-36 | DIODE RD13ES-B2 | |
| D410 | 8-719-110-36 | DIODE RD13ES-B2 | |
| D412 | 8-719-109-88 | DIODE RD5.6ES-B1 | |
| D418 | 8-719-936-82 | DIODE GP08DPKG3 | |
| D501 | 8-719-911-19 | DIODE 1SS119 | |
| D502 | 8-719-936-82 | DIODE GP08DPKG3 | |
| D504 | 8-719-936-84 | DIODE RGP10GPKG3 | |
| D507 | 8-719-911-19 | DIODE 1SS119 | |
| D509 | 8-719-936-84 | DIODE RGP10GPKG3 | |
| D511 ⚠ | 8-719-302-43 | DIODE EL1Z | |
| D512 | 8-719-936-84 | DIODE RGP10GPKG3 | |
| D513 | 8-719-976-64 | DIODE RGP02-17 | |
| D551 | 8-719-979-85 | DIODE EGP20G | |
| D552 | 8-719-945-80 | DIODE ERC06-15S | |
| D681 | 8-719-109-90 | DIODE RD5.6ES-B3 | |
| D682 | 8-719-911-19 | DIODE 1SS119 | |
| D683 | 8-719-911-19 | DIODE 1SS119 | |

<IC>

| | | |
|---|---|---|
| IC101 | 8-752-841-16 | IC CXP80424-065S |
| IC102 | 8-759-043-86 | IC ST24C02AB1 |

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.

**A** (KV-20TS32)

| REF.NO. | PART NO. | DESCRIPTION | REMARK |
|---|---|---|---|
| IC103 | 8-746-100-62 | IC SBX1618-51 | |
| IC251 | 8-759-980-43 | IC TDA2009A | |
| IC301 | 8-752-059-67 | IC CXA1465AS | |
| IC401 | 8-759-634-69 | IC M52470P | |
| IC402 | 8-759-088-00 | IC MM1114XFF | |
| IC403 | 8-759-088-00 | IC MM1114XFF | |
| IC404 | 8-759-069-14 | IC M51132L | |
| IC501 | 8-759-801-98 | IC LA7830 | |
| IC502 | 8-759-996-43 | IC RC4558PS | |
| IC681 | 8-759-701-79 | IC NJM7812FA | |
| IC682 | 8-759-982-10 | IC RC7809FA | |
| IC690 | 8-759-805-37 | IC L78LR05D-MA | |
| | | <JACK> | |
| J251 | 1-750-264-11 | JACK | |
| J401 | 1-537-511-11 | TERMINAL, S | |
| J402 | 1-750-278-11 | JACK BLOCK, PIN 3P | |
| J403 | 1-750-267-11 | JACK BLOCK, PIN (L TYPE) 3P | |
| | | <COIL> | |
| L001 | 1-410-470-11 | INDUCTOR 10UH | |
| L002 | 1-410-476-11 | INDUCTOR 33UH | |
| L003 | 1-410-470-11 | INDUCTOR 10UH | |
| L201 | 1-410-645-31 | INDUCTOR 100UH | |
| L202 | 1-408-408-00 | INDUCTOR 8.2UH | |
| L502 | 1-410-669-31 | INDUCTOR 33UH | |
| L503 ⚠ | 1-412-531-61 | INDUCTOR 33UH | |
| L551 | 1-412-533-61 | INDUCTOR 47UH | |
| L555 | 1-422-613-11 | COIL, AIR CORE | |
| L556 ⚠ | 1-459-769-13 | COIL, HORIZONTAL LINEARITY | |
| L557 | 1-412-553-61 | INDUCTOR 3.3MMH | |
| L560 | 1-459-104-00 | COIL, WITH CORE | |
| L561 ⚠ | 1-459-390-31 | COIL (WITH CORE) | |
| | | <MODULE> | |
| PM501 | 1-810-040-11 | PROTECTOR MODULE PM-35 | |
| | | <IC LINK> | |
| PS201 ⚠ | 1-532-675-91 | LINK, IC 1.5A | |
| | | <TRANSISTOR> | |
| Q001 | 8-729-422-36 | TRANSISTOR 2SB709A-Q | |
| Q004 | 8-729-422-36 | TRANSISTOR 2SB709A-Q | |
| Q005 | 8-729-422-27 | TRANSISTOR 2SD601A-Q | |
| Q007 | 8-729-422-27 | TRANSISTOR 2SD601A-Q | |
| Q261 | 8-729-422-36 | TRANSISTOR 2SB709A-Q | |
| Q262 | 8-729-422-27 | TRANSISTOR 2SD601A-Q | |
| Q301 | 8-729-422-36 | TRANSISTOR 2SB709A-Q | |
| Q309 | 8-729-422-27 | TRANSISTOR 2SD601A-Q | |
| Q310 | 8-729-422-27 | TRANSISTOR 2SD601A-Q | |
| Q311 | 8-729-422-27 | TRANSISTOR 2SD601A-Q | |
| Q401 | 8-729-422-36 | TRANSISTOR 2SB709A-Q | |
| Q402 | 8-729-422-36 | TRANSISTOR 2SB709A-Q | |
| Q501 | 8-729-422-27 | TRANSISTOR 2SD601A-Q | |
| Q550 | 8-729-140-50 | TRANSISTOR 2SC3209LK | |
| Q551 | 8-729-821-87 | TRANSISTOR 2SD1878-CA | |
| Q553 | 8-729-019-01 | TRANSISTOR 2SD2394-EF | |
| Q681 | 8-729-378-84 | TRANSISTOR 2SD788-5 | |

| REF.NO. | PART NO. | DESCRIPTION | | | REMARK |
|---|---|---|---|---|---|
| | | <RESISTOR> | | | |
| R001 | 1-216-073-00 | METAL GLAZE | 10K | 5% 1/10W | |
| R003 | 1-216-045-00 | METAL GLAZE | 680 | 5% 1/10W | |
| R004 | 1-216-033-00 | METAL GLAZE | 220 | 5% 1/10W | |
| R005 | 1-216-033-00 | METAL GLAZE | 220 | 5% 1/10W | |
| R006 | 1-216-073-00 | METAL GLAZE | 10K | 5% 1/10W | |
| R008 | 1-216-033-00 | METAL GLAZE | 220 | 5% 1/10W | |
| R009 | 1-216-057-00 | METAL GLAZE | 2.2K | 5% 1/10W | |
| R010 | 1-216-033-00 | METAL GLAZE | 220 | 5% 1/10W | |
| R011 | 1-216-033-00 | METAL GLAZE | 220 | 5% 1/10W | |
| R012 | 1-216-033-00 | METAL GLAZE | 220 | 5% 1/10W | |
| R013 | 1-216-049-00 | METAL GLAZE | 1K | 5% 1/10W | |
| R016 | 1-216-033-00 | METAL GLAZE | 220 | 5% 1/10W | |
| R017 | 1-216-033-00 | METAL GLAZE | 220 | 5% 1/10W | |
| R018 | 1-216-033-00 | METAL GLAZE | 220 | 5% 1/10W | |
| R019 | 1-216-061-00 | METAL GLAZE | 3.3K | 5% 1/10W | |
| R020 | 1-216-073-00 | METAL GLAZE | 10K | 5% 1/10W | |
| R021 | 1-216-073-00 | METAL GLAZE | 10K | 5% 1/10W | |
| R022 | 1-216-073-00 | METAL GLAZE | 10K | 5% 1/10W | |
| R023 | 1-216-033-00 | METAL GLAZE | 220 | 5% 1/10W | |
| R025 | 1-216-039-00 | METAL GLAZE | 390 | 5% 1/10W | |
| R026 | 1-216-097-00 | METAL GLAZE | 100K | 5% 1/10W | |
| R027 | 1-216-121-00 | METAL GLAZE | 1M | 5% 1/10W | |
| R028 | 1-216-073-00 | METAL GLAZE | 10K | 5% 1/10W | |
| R029 | 1-216-065-00 | METAL GLAZE | 4.7K | 5% 1/10W | |
| R030 | 1-216-073-00 | METAL GLAZE | 10K | 5% 1/10W | |
| R031 | 1-216-025-00 | METAL GLAZE | 100 | 5% 1/10W | |
| R032 | 1-216-025-00 | METAL GLAZE | 100 | 5% 1/10W | |
| R033 | 1-216-025-00 | METAL GLAZE | 100 | 5% 1/10W | |
| R034 | 1-216-025-00 | METAL GLAZE | 100 | 5% 1/10W | |
| R035 | 1-216-041-00 | METAL GLAZE | 470 | 5% 1/10W | |
| R036 | 1-216-033-00 | METAL GLAZE | 220 | 5% 1/10W | |
| R037 | 1-216-033-00 | METAL GLAZE | 220 | 5% 1/10W | |
| R038 | 1-216-033-00 | METAL GLAZE | 220 | 5% 1/10W | |
| R040 | 1-216-033-00 | METAL GLAZE | 220 | 5% 1/10W | |
| R041 | 1-216-033-00 | METAL GLAZE | 220 | 5% 1/10W | |
| R042 | 1-216-295-00 | METAL GLAZE | 0 | 5% 1/10W | |
| R043 | 1-216-295-00 | METAL GLAZE | 0 | 5% 1/10W | |
| R044 | 1-216-065-00 | METAL GLAZE | 4.7K | 5% 1/10W | |
| R045 | 1-216-065-00 | METAL GLAZE | 4.7K | 5% 1/10W | |
| R046 | 1-216-065-00 | METAL GLAZE | 4.7K | 5% 1/10W | |
| R047 | 1-216-049-00 | METAL GLAZE | 1K | 5% 1/10W | |
| R048 | 1-216-073-00 | METAL GLAZE | 10K | 5% 1/10W | |
| R049 | 1-216-025-00 | METAL GLAZE | 100 | 5% 1/10W | |
| R050 | 1-216-049-00 | METAL GLAZE | 1K | 5% 1/10W | |
| R051 | 1-216-073-00 | METAL GLAZE | 10K | 5% 1/10W | |
| R052 | 1-216-065-00 | METAL GLAZE | 4.7K | 5% 1/10W | |
| R054 | 1-216-049-00 | METAL GLAZE | 1K | 5% 1/10W | |
| R056 | 1-216-065-00 | METAL GLAZE | 4.7K | 5% 1/10W | |
| R057 | 1-216-065-00 | METAL GLAZE | 4.7K | 5% 1/10W | |
| R059 | 1-216-065-00 | METAL GLAZE | 4.7K | 5% 1/10W | |
| R060 | 1-216-033-00 | METAL GLAZE | 220 | 5% 1/10W | |
| R061 | 1-216-065-00 | METAL GLAZE | 4.7K | 5% 1/10W | |
| R062 | 1-216-069-00 | METAL GLAZE | 6.8K | 5% 1/10W | |
| R063 | 1-216-065-00 | METAL GLAZE | 4.7K | 5% 1/10W | |
| R064 | 1-216-065-00 | METAL GLAZE | 4.7K | 5% 1/10W | |
| R065 | 1-216-065-00 | METAL GLAZE | 4.7K | 5% 1/10W | |
| R066 | 1-216-295-00 | METAL GLAZE | 0 | 5% 1/10W | |
| R067 | 1-216-295-00 | METAL GLAZE | 0 | 5% 1/10W | |
| R069 | 1-216-295-00 | METAL GLAZE | 0 | 5% 1/10W | |
| R071 | 1-216-047-00 | METAL GLAZE | 820 | 5% 1/10W | |
| R073 | 1-216-079-00 | METAL GLAZE | 18K | 5% 1/10W | |

## A (KV-20TS32)

| REF.NO. | PART NO. | DESCRIPTION | | | | REMARK |
|---|---|---|---|---|---|---|
| R074 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R075 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R078 | 1-249-429-11 | CARBON | 10K | 5% | 1/4W | |
| R079 | 1-216-295-00 | METAL GLAZE | 0 | 5% | 1/10W | |
| R080 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R081 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R082 | 1-216-055-00 | METAL GLAZE | 1.8K | 5% | 1/10W | |
| R083 | 1-249-437-11 | CARBON | 47K | 5% | 1/4W | |
| R084 | 1-216-093-00 | METAL GLAZE | 68K | 5% | 1/10W | |
| R085 | 1-216-065-00 | METAL GLAZE | 4.7K | 5% | 1/10W | |
| R086 | 1-216-295-00 | METAL GLAZE | 0 | 5% | 1/10W | |
| R088 | 1-216-089-00 | METAL GLAZE | 47K | 5% | 1/10W | |
| R089 | 1-216-041-00 | METAL GLAZE | 470 | 5% | 1/10W | |
| R091 | 1-216-089-00 | METAL GLAZE | 47K | 5% | 1/10W | |
| R092 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R093 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R095 | 1-216-033-00 | METAL GLAZE | 220 | 5% | 1/10W | |
| R096 | 1-216-033-00 | METAL GLAZE | 220 | 5% | 1/10W | |
| R097 | 1-216-033-00 | METAL GLAZE | 220 | 5% | 1/10W | |
| R101 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R102 | 1-216-039-00 | METAL GLAZE | 390 | 5% | 1/10W | |
| R203 | 1-215-924-00 | METAL OXIDE | 15K | 5% | 3W | F |
| R206 | 1-216-689-11 | METAL GLAZE | 39K | 5% | 1/10W | |
| R207 | 1-216-083-00 | METAL GLAZE | 27K | 5% | 1/10W | |
| R251 | 1-216-059-00 | METAL GLAZE | 2.7K | 5% | 1/10W | |
| R252 | 1-216-059-00 | METAL GLAZE | 2.7K | 5% | 1/10W | |
| R253 | 1-216-061-00 | METAL GLAZE | 3.3K | 5% | 1/10W | |
| R254 | 1-216-015-00 | METAL GLAZE | 39 | 5% | 1/10W | |
| R256 | 1-216-015-00 | METAL GLAZE | 39 | 5% | 1/10W | |
| R257 | 1-216-061-00 | METAL GLAZE | 3.3K | 5% | 1/10W | |
| R258 | 1-216-051-00 | METAL GLAZE | 1.2K | 5% | 1/10W | |
| R259 | 1-216-051-00 | METAL GLAZE | 1.2K | 5% | 1/10W | |
| R262 | 1-216-075-00 | METAL GLAZE | 12K | 5% | 1/10W | |
| R263 | 1-216-075-00 | METAL GLAZE | 12K | 5% | 1/10W | |
| R264 | 1-216-041-00 | METAL GLAZE | 470 | 5% | 1/10W | |
| R265 | 1-216-085-00 | METAL GLAZE | 33K | 5% | 1/10W | |
| R266 | 1-216-085-00 | METAL GLAZE | 33K | 5% | 1/10W | |
| R267 | 1-216-089-00 | METAL GLAZE | 47K | 5% | 1/10W | |
| R268 | 1-216-065-00 | METAL GLAZE | 4.7K | 5% | 1/10W | |
| R269 | 1-249-385-11 | CARBON | 2.2 | 5% | 1/4W | |
| R270 | 1-249-385-11 | CARBON | 2.2 | 5% | 1/4W | |
| R271 | 1-249-417-11 | CARBON | 1K | 5% | 1/4W | |
| R272 | 1-249-411-11 | CARBON | 330 | 5% | 1/4W | |
| R273 | 1-249-411-11 | CARBON | 330 | 5% | 1/4W | |
| R276 | 1-249-417-11 | CARBON | 1K | 5% | 1/4W | |
| R301 | 1-216-065-00 | METAL GLAZE | 4.7K | 5% | 1/10W | |
| R302 | 1-216-057-00 | METAL GLAZE | 2.2K | 5% | 1/10W | |
| R311 | 1-216-678-11 | METAL CHIP | 13K | 0.50% | 1/10W | |
| R312 | 1-216-079-00 | METAL GLAZE | 18K | 5% | 1/10W | |
| R313 | 1-216-653-11 | METAL CHIP | 1.2K | 0.50% | 1/10W | |
| R314 | 1-216-117-00 | METAL GLAZE | 680K | 5% | 1/10W | |
| R315 | 1-216-051-00 | METAL GLAZE | 1.2K | 5% | 1/10W | |
| R319 | 1-216-295-00 | METAL GLAZE | 0 | 5% | 1/10W | |
| R320 | 1-216-295-00 | METAL GLAZE | 0 | 5% | 1/10W | |
| R321 | 1-216-295-00 | METAL GLAZE | 0 | 5% | 1/10W | |
| R322 | 1-216-295-00 | METAL GLAZE | 0 | 5% | 1/10W | |
| R323 | 1-216-121-00 | METAL GLAZE | 1M | 5% | 1/10W | |
| R324 | 1-216-025-00 | METAL GLAZE | 100 | 5% | 1/10W | |
| R326 | 1-216-025-00 | METAL GLAZE | 100 | 5% | 1/10W | |
| R327 | 1-216-077-00 | METAL GLAZE | 15K | 5% | 1/10W | |
| R328 | 1-216-025-00 | METAL GLAZE | 100 | 5% | 1/10W | |
| R329 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R330 | 1-216-067-00 | METAL GLAZE | 5.6K | 5% | 1/10W | |
| R331 | 1-216-093-00 | METAL GLAZE | 68K | 5% | 1/10W | |
| R335 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R336 | 1-216-121-00 | METAL GLAZE | 1M | 5% | 1/10W | |
| R338 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R339 | 1-216-045-00 | METAL GLAZE | 680 | 5% | 1/10W | |
| R341 | 1-216-687-11 | METAL CHIP | 33K | 0.50% | 1/10W | |
| R343 | 1-216-071-00 | METAL GLAZE | 8.2K | 5% | 1/10W | |
| R345 | 1-249-429-11 | CARBON | 10K | 5% | 1/4W | |
| R346 | 1-249-421-11 | CARBON | 2.2K | 5% | 1/4W | |
| R347 | 1-216-025-00 | METAL GLAZE | 100 | 5% | 1/10W | |
| R351 | 1-216-085-00 | METAL GLAZE | 33K | 5% | 1/10W | |
| R356 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R357 | 1-216-089-00 | METAL GLAZE | 47K | 5% | 1/10W | |
| R358 | 1-216-091-00 | METAL GLAZE | 56K | 5% | 1/10W | |
| R360 | 1-216-041-00 | METAL GLAZE | 470 | 5% | 1/10W | |
| R361 | 1-216-025-00 | METAL GLAZE | 100 | 5% | 1/10W | |
| R362 | 1-216-295-00 | METAL GLAZE | 0 | 5% | 1/10W | |
| R363 | 1-216-295-00 | METAL GLAZE | 0 | 5% | 1/10W | |
| R364 | 1-216-295-00 | METAL GLAZE | 0 | 5% | 1/10W | |
| R365 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R367 | 1-216-109-00 | METAL GLAZE | 330K | 5% | 1/10W | |
| R401 | 1-216-022-00 | METAL GLAZE | 75 | 5% | 1/10W | |
| R402 | 1-216-022-00 | METAL GLAZE | 75 | 5% | 1/10W | |
| R403 | 1-216-022-00 | METAL GLAZE | 75 | 5% | 1/10W | |
| R404 | 1-216-295-00 | METAL GLAZE | 0 | 5% | 1/10W | |
| R405 | 1-216-113-00 | METAL GLAZE | 470K | 5% | 1/10W | |
| R406 | 1-216-113-00 | METAL GLAZE | 470K | 5% | 1/10W | |
| R409 | 1-216-295-00 | METAL GLAZE | 0 | 5% | 1/10W | |
| R410 | 1-216-022-00 | METAL GLAZE | 75 | 5% | 1/10W | |
| R411 | 1-216-113-00 | METAL GLAZE | 470K | 5% | 1/10W | |
| R412 | 1-216-113-00 | METAL GLAZE | 470K | 5% | 1/10W | |
| R413 | 1-216-295-00 | METAL GLAZE | 0 | 5% | 1/10W | |
| R414 | 1-216-041-00 | METAL GLAZE | 470 | 5% | 1/10W | |
| R415 | 1-216-041-00 | METAL GLAZE | 470 | 5% | 1/10W | |
| R419 | 1-249-409-11 | CARBON | 220 | 5% | 1/4W | |
| R423 | 1-216-295-00 | METAL GLAZE | 0 | 5% | 1/10W | |
| R424 | 1-216-025-00 | METAL GLAZE | 100 | 5% | 1/10W | |
| R429 | 1-216-295-00 | METAL GLAZE | 0 | 5% | 1/10W | |
| R430 | 1-216-295-00 | METAL GLAZE | 0 | 5% | 1/10W | |
| R441 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R442 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R443 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R444 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R445 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R447 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R448 | 1-249-417-11 | CARBON | 1K | 5% | 1/4W | |
| R449 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R450 | 1-216-025-00 | METAL GLAZE | 100 | 5% | 1/10W | |
| R452 | 1-249-417-11 | CARBON | 1K | 5% | 1/4W | |
| R453 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R454 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R455 | 1-216-295-00 | METAL GLAZE | 0 | 5% | 1/10W | |
| R456 | 1-216-295-00 | METAL GLAZE | 0 | 5% | 1/10W | |
| R457 | 1-216-295-00 | METAL GLAZE | 0 | 5% | 1/10W | |
| R458 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R459 | 1-216-295-00 | METAL GLAZE | 0 | 5% | 1/10W | |
| R460 | 1-216-295-00 | METAL GLAZE | 0 | 5% | 1/10W | |
| R469 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R471 | 1-216-295-00 | METAL GLAZE | 0 | 5% | 1/10W | |
| R472 | 1-216-041-00 | METAL GLAZE | 470 | 5% | 1/10W | |
| R473 | 1-216-043-00 | METAL GLAZE | 560 | 5% | 1/10W | |
| R476 | 1-249-429-11 | CARBON | 10K | 5% | 1/4W | |
| R477 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R479 | 1-216-295-00 | METAL GLAZE | 0 | 5% | 1/10W | |

- The components identified by ⊠ in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation.

Should replacement be required, replace only with the value originally used.

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.

**A** (KV-20TS32) **G** (KV-20TS29/20TS32/2170RS)

| REF.NO. | PART NO. | DESCRIPTION | | | | REMARK |
|---|---|---|---|---|---|---|
| R480 | 1-216-295-00 | METAL GLAZE | 0 | 5% | 1/10W | |
| R501 | 1-249-429-11 | CARBON | 10K | 5% | 1/4W | |
| R502 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R505 | 1-216-349-00 | METAL OXIDE | 1 | 5% | 1W | F |
| R506 | 1-216-429-00 | METAL OXIDE | 270 | 5% | 1W | F |
| R507 | 1-247-887-00 | CARBON | 220K | 5% | 1/4W | |
| R508 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R509 | 1-216-101-00 | METAL GLAZE | 150K | 5% | 1/10W | |
| R510 | 1-216-055-00 | METAL GLAZE | 1.8K | 5% | 1/10W | |
| ⊠R511 ⚠ | | METAL | | | 1/10W | |
| R512 | 1-215-445-00 | METAL | 10K | 1% | 1/10W | |
| R513 | 1-216-645-11 | METAL CHIP | 560 | 0.50% | 1/10W | |
| R515 | 1-216-673-11 | METAL CHIP | 8.2K | 0.50% | 1/10W | |
| R517 | 1-216-699-11 | METAL CHIP | 100K | 0.50% | 1/10W | |
| R518 | 1-215-431-00 | METAL | 2.7K | 1% | 1/4W | |
| R519 | 1-215-427-00 | METAL | 1.8K | 1% | 1/4W | |
| R520 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R530 | 1-249-419-11 | CARBON | 1.5K | 5% | 1/4W | |
| R531 | 1-216-357-00 | METAL OXIDE | 4.7 | 5% | 1W | F |
| R532 ⚠ | 1-215-880-91 | METAL OXIDE | 10 | 5% | 2W | F |
| R533 | 1-216-359-00 | METAL OXIDE | 6.8 | 5% | 1W | F |
| R534 | 1-249-393-11 | CARBON | 10 | 5% | 1/4W | F |
| R535 | 1-249-389-11 | CARBON | 4.7 | 5% | 1/4W | F |
| ⊠R537 ⚠ | | METAL | | | 1/10W | |
| R538 | 1-249-441-11 | CARBON | 100K | 5% | 1/4W | |
| R541 | 1-249-418-11 | CARBON | 1.2K | 5% | 1/4W | F |
| R542 | 1-216-357-00 | METAL OXIDE | 4.7 | 5% | 1W | F |
| R549 | 1-216-369-00 | METAL OXIDE | 1 | 5% | 2W | F |
| R554 | 1-216-061-00 | METAL GLAZE | 3.3K | 5% | 1/10W | |
| R555 | 1-215-896-00 | METAL OXIDE | 4.7K | 5% | 2W | F |
| R558 | 1-249-415-11 | CARBON | 680 | 5% | 1/4W | F |
| R559 | 1-215-862-11 | METAL OXIDE | 68 | 5% | 1W | F |
| R565 | 1-249-377-11 | CARBON | 0.47 | 5% | 1/4W | F |
| R566 | 1-249-417-11 | CARBON | 1K | 5% | 1/4W | F |
| R588 | 1-216-105-00 | METAL GLAZE | 220K | 5% | 1/10W | |
| R590 | 1-216-063-00 | METAL GLAZE | 3.9K | 5% | 1/10W | |
| R591 | 1-216-061-00 | METAL GLAZE | 3.3K | 5% | 1/10W | |
| R592 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R593 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R594 | 1-216-689-11 | METAL GLAZE | 39K | 5% | 1/10W | |
| R595 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R599 | 1-215-857-11 | METAL OXIDE | 10 | 5% | 1W | F |
| R681 | 1-215-883-11 | METAL OXIDE | 33 | 5% | 2W | F |
| R682 | 1-249-415-11 | CARBON | 680 | 5% | 1/4W | |
| R683 | 1-216-356-00 | METAL OXIDE | 3.9 | 5% | 1W | F |
| R684 | 1-216-380-11 | METAL OXIDE | 8.2 | 5% | 2W | F |
| | | <SWITCH> | | | | |
| S001 | 1-571-532-21 | SWITCH, TACTIL | | | | |
| S002 | 1-571-532-21 | SWITCH, TACTIL | | | | |
| S003 | 1-571-532-21 | SWITCH, TACTIL | | | | |
| S004 | 1-571-532-21 | SWITCH, TACTIL | | | | |
| S005 | 1-571-532-21 | SWITCH, TACTIL | | | | |
| S006 | 1-571-532-21 | SWITCH, TACTIL | | | | |
| | | <SPARK GAP> | | | | |
| SG551 | 1-519-422-11 | GAP, SPARK | | | | |
| | | <TRANSFORMER> | | | | |
| T504 ⚠ | 1-453-141-11 | TRANSFORMER ASSY, FLYBACK (NX-1600A5) | | | | |
| T551 | 1-437-195-11 | TRANSFORMER, HORIZONTAL DRIVE | | | | |
| | | <TUNER> | | | | |
| TU101 ⚠ | 8-598-039-01 | TUNER BTF-WA401 | | | | |
| | | <CRYSTAL> | | | | |
| X001 | 1-579-917-21 | VIBRATOR, CRYSTAL | | | | |
| X301 | 1-567-505-11 | OSCILLATOR, CRYSTAL | | | | |
| | | ********** | | | | |
| | *A-1316-146-A | G BOARD, COMPLETE | | | | |
| | | ********** | | | | |
| | | (KV-20TS29(U/C),20TS32,2170RS) | | | | |
| | 1-533-223-11 | CLIP, FUSE | | | | |
| | 4-382-854-11 | SCREW (M3X10), P, SW (+) | | | | |
| | | <CAPACITOR> | | | | |
| C601 ⚠ | 1-136-311-51 | FILM | 0.47MF | 20% | 125V | |
| C603 | 1-124-478-11 | ELECT | 100MF | 20% | 25V | |
| C604 ⚠ | 1-162-677-51 | CERAMIC | 470PF | 10% | 125V | |
| C605 ⚠ | 1-162-677-51 | CERAMIC | 470PF | 10% | 125V | |
| C606 ⚠ | 1-102-050-51 | CERAMIC | 0.01MF | | 500V | |
| C607 ⚠ | 1-102-050-51 | CERAMIC | 0.01MF | | 500V | |
| C613 | 1-104-759-11 | ELECT | 470MF | 20% | 200V | |
| C614 | 1-104-759-11 | ELECT | 470MF | 20% | 200V | |
| C615 | 1-164-625-11 | CERAMIC | 680PF | 10% | 500V | |
| C616 | 1-136-169-00 | FILM | 0.22MF | 5% | 50V | |
| C617 | 1-136-169-00 | FILM | 0.22MF | 5% | 50V | |
| C618 | 1-164-625-11 | CERAMIC | 680PF | 10% | 500V | |
| C619 | 1-164-625-11 | CERAMIC | 680PF | 10% | 500V | |
| C620 | 1-136-601-11 | FILM | 0.01MF | 10% | 630V | |
| C621 | 1-129-744-91 | FILM | 0.027MF | 10% | 400V | |
| C622 | 1-124-478-11 | ELECT | 100MF | 20% | 25V | |
| C623 | 1-124-360-00 | ELECT | 1000MF | 20% | 16V | |
| C624 | 1-124-557-11 | ELECT | 1000MF | 20% | 25V | |
| C626 | 1-123-024-21 | ELECT | 33MF | | 160V | |
| C627 | 1-136-601-11 | FILM | 0.01MF | 10% | 630V | |
| C629 | 1-106-355-12 | MYLAR | 0.0033MF | 10% | 200V | |
| C630 | 1-136-169-00 | FILM | 0.22MF | 5% | 50V | |
| C631 | 1-136-169-00 | FILM | 0.22MF | 5% | 50V | |
| C632 | 1-136-169-00 | FILM | 0.22MF | 5% | 50V | |
| C633 ⚠ | 1-162-677-51 | CERAMIC | 470PF | 10% | 125V | |
| C634 ⚠ | 1-162-677-51 | CERAMIC | 470PF | 10% | 125V | |
| C635 | 1-137-372-11 | FILM | 0.022MF | 5% | 50V | |
| C636 | 1-162-318-11 | CERAMIC | 0.001MF | 10% | 500V | |
| C637 | 1-164-735-11 | CERAMIC | 1500PF | 10% | 500V | |
| C638 | 1-164-735-11 | CERAMIC | 1500PF | 10% | 500V | |
| C639 | 1-164-735-11 | CERAMIC | 1500PF | 10% | 500V | |
| C640 | 1-164-735-11 | CERAMIC | 1500PF | 10% | 500V | |
| | | <CONNECTOR> | | | | |
| CN601 | *1-580-843-11 | PIN, CONNECTOR (POWER) | | | | |
| CN602 | *1-508-786-00 | PIN, CONNECTOR (5MM PITCH) 2P | | | | |
| CN603 | *1-508-765-00 | PIN, CONNECTOR (5MM PITCH) 3P | | | | |
| CN604 | *1-564-510-11 | PLUG, CONNECTOR 7P | | | | |
| CN605 | *1-691-135-11 | PIN, CONNECTOR (PC BOARD) 4P | | | | |
| CN606 | *1-564-505-11 | PLUG, CONNECTOR 2P | | | | |

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

## G (KV-20TS29/20TS32/2170RS)

## G (KV-21STR2)

| REF.NO. | PART NO. | DESCRIPTION | REMARK |
|---|---|---|---|
| | | <DIODE> | |
| D604 | 8-719-911-19 | DIODE 1SS119 | |
| D606 ⚠ | 8-719-510-53 | DIODE D4SB60L | |
| D607 | 8-719-510-48 | DIODE D1N20R | |
| D608 | 8-719-510-48 | DIODE D1N20R | |
| D609 | 8-719-510-48 | DIODE D1N20R | |
| D610 | 8-719-510-48 | DIODE D1N20R | |
| D611 | 8-719-032-13 | DIODE D1NS6-TA2 | |
| D612 | 8-719-510-02 | DIODE D1NS4 | |
| D613 | 8-719-510-02 | DIODE D1NS4 | |
| D614 | 8-719-510-02 | DIODE D1NS4 | |
| D615 | 8-719-510-02 | DIODE D1NS4 | |
| D616 | 8-719-510-26 | DIODE D1NL20 | |
| D617 | 8-719-510-26 | DIODE D1NL20 | |
| D618 | 8-719-510-26 | DIODE D1NL20 | |
| D619 | 8-719-510-26 | DIODE D1NL20 | |
| D620 | 8-719-510-02 | DIODE D1NS4 | |
| D621 | 8-719-510-02 | DIODE D1NS4 | |
| D622 | 8-719-510-48 | DIODE D1N20R | |
| D624 | 8-719-911-19 | DIODE 1SS119 | |
| D625 | 8-719-911-19 | DIODE 1SS119 | |
| D626 | 8-719-110-14 | DIODE RD9.1ES-B3 | |
| D627 | 8-719-911-19 | DIODE 1SS119 | |
| D629 | 8-719-911-19 | DIODE 1SS119 | |
| D631 | 8-719-510-48 | DIODE D1N20R | |
| | | <FUSE> | |
| F601 ⚠ | 1-532-748-11 | FUSE, GLASS TUBE 6.3A/125V | |
| | | <FERRITE BEAD> | |
| FB601 | 1-412-911-11 | INDUCTOR, FERRITE BEAD | |
| FB602 | 1-412-911-11 | INDUCTOR, FERRITE BEAD | |
| FB603 | 1-412-911-11 | INDUCTOR, FERRITE BEAD | |
| FB604 | 1-412-911-11 | INDUCTOR, FERRITE BEAD | |
| FB605 | 1-410-396-41 | FERRITE BEAD INDUCTOR | |
| FB606 | 1-410-396-41 | FERRITE BEAD INDUCTOR | |
| FB607 | 1-410-396-41 | FERRITE BEAD INDUCTOR | |
| FB608 | 1-410-396-41 | FERRITE BEAD INDUCTOR | |
| FB609 | 1-410-396-41 | FERRITE BEAD INDUCTOR | |
| | | <IC> | |
| IC602 ⚠ | 1-810-050-11 | POWER MODULE DM-47 | |
| | | <COIL> | |
| L601 | 1-412-533-61 | INDUCTOR 47UH | |
| | | <TRANSISTOR> | |
| Q602 | 8-729-119-78 | TRANSISTOR 2SC2785-HFE | |
| Q603 | 8-729-016-15 | TRANSISTOR 2SC4833MNP | |
| Q604 | 8-729-016-15 | TRANSISTOR 2SC4833MNP | |
| Q605 | 8-729-924-90 | TRANSISTOR 2SB1370-EF | |
| Q606 | 8-729-119-78 | TRANSISTOR 2SC2785-HFE | |
| | | <RESISTOR> | |
| R602 | 1-249-421-11 | CARBON 2.2K 5% 1/4W F | |
| R604 | 1-249-421-11 | CARBON 2.2K 5% 1/4W | |
| R608 | 1-247-893-11 | CARBON 390K 5% 1/4W | |
| R609 | 1-247-893-11 | CARBON 390K 5% 1/4W | |
| R610 | 1-202-933-11 | FUSIBLE 0.1 10% 1/2W F | |
| R612 | 1-216-349-00 | METAL OXIDE 1 5% 1W F | |
| R613 | 1-216-349-00 | METAL OXIDE 1 5% 1W F | |
| R614 | 1-215-904-71 | METAL OXIDE 100K 5% 2W F | |
| R615 | 1-215-904-71 | METAL OXIDE 100K 5% 2W F | |
| R616 | 1-215-858-71 | METAL OXIDE 15 5% 1W F | |
| R617 | 1-215-858-71 | METAL OXIDE 15 5% 1W F | |
| R618 | 1-217-386-00 | FUSIBLE 8.2 5% 1/4W F | |
| R619 | 1-212-853-61 | FUSIBLE 6.8 5% 1/4W F | |
| R620 | 1-249-379-11 | CARBON 0.68 5% 1/4W F | |
| R621 | 1-249-377-11 | CARBON 0.47 5% 1/4W F | |
| R622 | 1-249-377-11 | CARBON 0.47 5% 1/4W F | |
| R623 | 1-249-377-11 | CARBON 0.47 5% 1/4W F | |
| R624 | 1-249-425-11 | CARBON 4.7K 5% 1/4W F | |
| R626 | 1-247-883-00 | CARBON 150K 5% 1/4W | |
| R627 | 1-249-377-11 | CARBON 0.47 5% 1/4W F | |
| R630 | 1-249-377-11 | CARBON 0.47 5% 1/4W F | |
| R631 | 1-249-377-11 | CARBON 0.47 5% 1/4W F | |
| R632 | 1-249-377-11 | CARBON 0.47 5% 1/4W F | |
| R633 | 1-249-388-11 | CARBON 3.9 5% 1/4W F | |
| R635 | 1-249-433-11 | CARBON 22K 5% 1/4W | |
| R636 | 1-249-421-11 | CARBON 2.2K 5% 1/4W | |
| R637 | 1-249-407-11 | CARBON 150 5% 1/4W F | |
| R639 ⚠ | 1-202-892-91 | SOLID 4.7M 20% 1/2W | |
| R640 | 1-249-414-11 | CARBON 560 5% 1/4W | |
| R642 | 1-249-421-11 | CARBON 2.2K 5% 1/4W | |
| R643 | 1-215-863-71 | METAL OXIDE 100 5% 1W F | |
| R645 | 1-217-386-00 | FUSIBLE 8.2 5% 1/4W F | |
| R646 | 1-216-422-71 | METAL OXIDE 18 5% 1W F | |
| R647 | 1-216-425-11 | METAL OXIDE 56 5% 1W F | |
| R648 | 1-249-421-11 | CARBON 2.2K 5% 1/4W | |
| R649 | 1-249-417-11 | CARBON 1K 5% 1/4W | |
| R650 | 1-249-417-11 | CARBON 1K 5% 1/4W | |
| R651 | 1-249-421-11 | CARBON 2.2K 5% 1/4W F | |
| R652 | 1-249-417-11 | CARBON 1K 5% 1/4W | |
| R653 | 1-249-417-11 | CARBON 1K 5% 1/4W | |
| | | <RELAY> | |
| RY601 ⚠ | 1-515-684-31 | RELAY | |
| RY602 | 1-515-684-31 | RELAY | |
| | | <TRANSFORMER> | |
| T601 ⚠ | 1-423-585-11 | TRANSFORMER, LINE FILTER (LFT) | |
| T602 ⚠ | 1-423-585-11 | TRANSFORMER, LINE FILTER (LFT) | |
| T603 ⚠ | 1-423-563-11 | TRANSFORMER, CONVERTER DRIVE | |
| T604 | 1-423-582-11 | TRANSFORMER, FERRITE (SBT) | |
| T605 ⚠ | 1-423-564-11 | TRANSFORMER, CONVERTER (PIT) | |
| | | <THERMISTOR> | |
| THP601 ⚠ | 1-808-081-14 | THERMISTOR, POSITIVE | |
| | | <VARISTOR> | |
| VDR601 | 1-810-052-21 | VARISTOR | |
| VDR602 | 1-810-052-21 | VARISTOR | |
| | | ********** | |
| | *A-1316-148-A | G BOARD, COMPLETE (KV-21STR2) | |
| | | ********** | |
| | 1-533-223-11 | CLIP, FUSE | |

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Replace only with part number specified.

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Ne les remplacer que par une piece portant le numero specifie.

**G (KV-21STR2)**

| REF.NO. | PART NO. | DESCRIPTION | | | | REMARK |
|---|---|---|---|---|---|---|
| | 4-382-854-11 | SCREW (M3X10), P, SW (+) | | | | |
| | | <CAPACITOR> | | | | |
| C601 ⚠ | 1-136-311-61 | FILM | 0.47MF | 20% | 300V | |
| C603 | 1-124-478-11 | ELECT | 100MF | 20% | 25V | |
| C606 ⚠ | 1-102-050-51 | CERAMIC | 0.01MF | | 500V | |
| C607 ⚠ | 1-102-050-51 | CERAMIC | 0.01MF | | 500V | |
| C608 ⚠ | 1-137-376-91 | FILM | 0.1MF | 5% | 50V | |
| C609 | 1-106-383-00 | MYLAR | 0.047MF | | 200V | |
| C610 ⚠ | 1-126-406-91 | ELECT | 2.2MF | 20% | 400V | |
| C611 ⚠ | 1-124-122-91 | ELECT | 100MF | 20% | 50V | |
| C612 ⚠ | 1-137-376-91 | FILM | 0.1MF | 5% | 50V | |
| C613 | 1-104-758-11 | ELECT | 560MF | 20% | 250V | |
| C614 | 1-104-758-11 | ELECT | 560MF | 20% | 250V | |
| C615 | 1-164-625-11 | CERAMIC | 680PF | 10% | 500V | |
| C616 | 1-136-169-00 | FILM | 0.22MF | 5% | 50V | |
| C617 | 1-136-169-00 | FILM | 0.22MF | 5% | 50V | |
| C618 | 1-164-625-11 | CERAMIC | 680PF | 10% | 500V | |
| C619 | 1-164-625-11 | CERAMIC | 680PF | 10% | 500V | |
| C620 | 1-136-601-11 | FILM | 0.01MF | 10% | 630V | |
| C621 | 1-129-744-91 | FILM | 0.027MF | 10% | 400V | |
| C622 | 1-124-478-11 | ELECT | 100MF | 20% | 25V | |
| C623 | 1-124-360-00 | ELECT | 1000MF | 20% | 16V | |
| C624 | 1-124-557-11 | ELECT | 1000MF | 20% | 25V | |
| C626 | 1-123-024-21 | ELECT | 33MF | | 160V | |
| C627 | 1-136-601-11 | FILM | 0.01MF | 10% | 630V | |
| C629 | 1-106-355-12 | MYLAR | 0.0033MF | 10% | 200V | |
| C630 | 1-136-169-00 | FILM | 0.22MF | 5% | 50V | |
| C631 | 1-136-169-00 | FILM | 0.22MF | 5% | 50V | |
| C632 | 1-136-169-00 | FILM | 0.22MF | 5% | 50V | |
| C633 ⚠ | 1-164-502-51 | CERAMIC | 0.001MF | 20% | 400V | |
| C634 ⚠ | 1-164-502-51 | CERAMIC | 0.001MF | 20% | 400V | |
| C635 | 1-137-372-11 | FILM | 0.022MF | 5% | 50V | |
| C636 | 1-162-318-11 | CERAMIC | 0.001MF | 10% | 500V | |
| C637 | 1-164-735-11 | CAP, CERAMIC | 1500PF | | | |
| C638 | 1-164-735-11 | CAP, CERAMIC | 1500PF | | | |
| C639 | 1-164-735-11 | CAP, CERAMIC | 1500PF | | | |
| C640 | 1-164-735-11 | CAP, CERAMIC | 1500PF | | | |
| | | <CONNECTOR> | | | | |
| CN601 | *1-580-843-11 | PIN, CONNECTOR (POWER) | | | | |
| CN602 | *1-508-786-00 | PIN, CONNECTOR (5MM PITCH) 2P | | | | |
| CN603 | *1-508-765-00 | PIN, CONNECTOR (5MM PITCH) 3P | | | | |
| CN604 | *1-564-510-11 | PLUG, CONNECTOR 7P | | | | |
| CN605 | *1-691-135-11 | PIN, CONNECTOR (PC BOARD) 4P | | | | |
| CN606 | *1-564-505-11 | PLUG, CONNECTOR 2P | | | | |
| | | <DIODE> | | | | |
| D604 | 8-719-911-19 | DIODE 1SS119 | | | | |
| D605 ⚠ | 8-719-304-63 | DIODE RM11C | | | | |
| D606 ⚠ | 8-719-510-53 | DIODE D4SB60L | | | | |
| D607 | 8-719-510-48 | DIODE D1N20R | | | | |
| D608 | 8-719-510-48 | DIODE D1N20R | | | | |
| D609 | 8-719-510-48 | DIODE D1N20R | | | | |
| D610 | 8-719-510-48 | DIODE D1N20R | | | | |
| D611 | 8-719-032-13 | DIODE D1NS6-TA2 | | | | |
| D612 | 8-719-510-02 | DIODE D1NS4 | | | | |
| D613 | 8-719-510-02 | DIODE D1NS4 | | | | |
| D614 | 8-719-510-02 | DIODE D1NS4 | | | | |
| D615 | 8-719-510-02 | DIODE D1NS4 | | | | |
| D616 | 8-719-510-26 | DIODE D1NL20 | | | | |
| D617 | 8-719-510-26 | DIODE D1NL20 | | | | |
| D618 | 8-719-510-26 | DIODE D1NL20 | | | | |
| D619 | 8-719-510-26 | DIODE D1NL20 | | | | |
| D620 | 8-719-510-02 | DIODE D1NS4 | | | | |
| D621 | 8-719-510-02 | DIODE D1NS4 | | | | |
| D622 | 8-719-510-48 | DIODE D1N20R | | | | |
| D624 | 8-719-911-19 | DIODE 1SS119 | | | | |
| D625 | 8-719-911-19 | DIODE 1SS119 | | | | |
| D626 | 8-719-110-14 | DIODE RD9.1ES-B3 | | | | |
| D627 | 8-719-911-19 | DIODE 1SS119 | | | | |
| D629 | 8-719-911-19 | DIODE 1SS119 | | | | |
| D631 | 8-719-510-48 | DIODE D1N20R | | | | |
| | | <FUSE> | | | | |
| F601 ⚠ | 1-532-506-51 | FUSE 6.3A/250V | | | | |
| | | <FERRITE BEAD> | | | | |
| FB601 | 1-412-911-11 | INDUCTOR, FERRITE BEAD | | | | |
| FB602 | 1-412-911-11 | INDUCTOR, FERRITE BEAD | | | | |
| FB603 | 1-412-911-11 | INDUCTOR, FERRITE BEAD | | | | |
| FB604 | 1-412-911-11 | INDUCTOR, FERRITE BEAD | | | | |
| FB605 | 1-410-396-41 | FERRITE BEAD INDUCTOR | | | | |
| FB606 | 1-410-396-41 | FERRITE BEAD INDUCTOR | | | | |
| FB607 | 1-410-396-41 | FERRITE BEAD INDUCTOR | | | | |
| FB608 | 1-410-396-41 | FERRITE BEAD INDUCTOR | | | | |
| FB609 | 1-410-396-41 | FERRITE BEAD INDUCTOR | | | | |
| | | <IC> | | | | |
| IC601 ⚠ | 8-749-923-94 | IC STR81159A | | | | |
| IC602 ⚠ | 1-810-050-11 | POWER MODULE DM-47 | | | | |
| | | <COIL> | | | | |
| L601 | 1-412-533-61 | INDUCTOR | 47UH | | | |
| | | <TRANSISTOR> | | | | |
| Q602 | 8-729-119-78 | TRANSISTOR 2SC2785-HFE | | | | |
| Q603 | 8-729-016-15 | TRANSISTOR 2SC4833MNP | | | | |
| Q604 | 8-729-016-15 | TRANSISTOR 2SC4833MNP | | | | |
| Q605 | 8-729-924-90 | TRANSISTOR 2SB1370-EF | | | | |
| Q606 | 8-729-119-78 | TRANSISTOR 2SC2785-HFE | | | | |
| | | <RESISTOR> | | | | |
| R602 | 1-249-421-11 | CARBON | 2.2K | 5% | 1/4W | F |
| R604 | 1-249-421-11 | CARBON | 2.2K | 5% | 1/4W | |
| R605 ⚠ | 1-249-451-71 | CARBON | 2.2 | 5% | 1/4W | F |
| R606 ⚠ | 1-208-294-11 | WIREWOUND | 2.2 | 5% | 20W | F |
| R607 | 1-249-389-11 | CARBON | 4.7 | 5% | 1/4W | |
| R608 | 1-247-893-11 | CARBON | 390K | 5% | 1/4W | |
| R609 | 1-247-893-11 | CARBON | 390K | 5% | 1/4W | |
| R610 | 1-202-933-11 | FUSIBLE | 0.1 | 10% | 1/2W | F |
| R612 | 1-216-349-00 | METAL OXIDE | 1 | 5% | 1W | F |
| R613 | 1-216-349-00 | METAL OXIDE | 1 | 5% | 1W | F |
| R614 | 1-215-904-71 | METAL OXIDE | 100K | 5% | 2W | F |
| R615 | 1-215-904-71 | METAL OXIDE | 100K | 5% | 2W | F |
| R616 | 1-215-858-71 | METAL OXIDE | 15 | 5% | 1W | F |
| R617 | 1-215-858-71 | METAL OXIDE | 15 | 5% | 1W | F |
| R618 | 1-217-386-00 | FUSIBLE | 8.2 | 5% | 1/4W | F |
| R619 | 1-212-853-61 | FUSIBLE | 6.8 | 5% | 1/4W | F |

**G** (KV-21STR2) **C**

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

| REF.NO. | PART NO. | DESCRIPTION | | | | REMARK |
|---|---|---|---|---|---|---|
| R620 | 1-249-379-11 | CARBON | 0.68 | 5% | 1/4W | F |
| R621 | 1-249-377-11 | CARBON | 0.47 | 5% | 1/4W | F |
| R622 | 1-249-377-11 | CARBON | 0.47 | 5% | 1/4W | F |
| R623 | 1-249-377-11 | CARBON | 0.47 | 5% | 1/4W | F |
| R624 | 1-249-425-11 | CARBON | 4.7K | 5% | 1/4W | F |
| R626 | 1-247-883-00 | CARBON | 150K | 5% | 1/4W | |
| R627 | 1-249-377-11 | CARBON | 0.47 | 5% | 1/4W | F |
| R630 | 1-249-377-11 | CARBON | 0.47 | 5% | 1/4W | F |
| R631 | 1-249-377-11 | CARBON | 0.47 | 5% | 1/4W | F |
| R632 | 1-249-377-11 | CARBON | 0.47 | 5% | 1/4W | F |
| R633 | 1-249-388-11 | CARBON | 3.9 | 5% | 1/4W | F |
| R635 | 1-249-433-11 | CARBON | 22K | 5% | 1/4W | |
| R636 | 1-249-421-11 | CARBON | 2.2K | 5% | 1/4W | |
| R637 | 1-249-407-11 | CARBON | 150 | 5% | 1/4W | F |
| R639 ⚠ | 1-247-289-11 | CARBON | 8.2M | 5% | 1W | |
| R640 | 1-249-414-11 | CARBON | 560 | 5% | 1/4W | |
| R642 | 1-249-421-11 | CARBON | 2.2K | 5% | 1/4W | |
| R643 | 1-215-863-71 | METAL OXIDE | 100 | 5% | 1W | F |
| R644 ⚠ | 1-215-915-71 | METAL OXIDE | 470 | 5% | 3W | F |
| R645 | 1-217-386-00 | FUSIBLE | 8.2 | 5% | 1/4W | F |
| R646 | 1-216-422-71 | METAL OXIDE | 18 | 5% | 1W | F |
| R647 | 1-216-425-11 | METAL OXIDE | 56 | 5% | 1W | F |
| R648 | 1-249-421-11 | CARBON | 2.2K | 5% | 1/4W | |
| R649 | 1-249-417-11 | CARBON | 1K | 5% | 1/4W | |
| R650 | 1-249-417-11 | CARBON | 1K | 5% | 1/4W | |
| R651 | 1-249-421-11 | CARBON | 2.2K | 5% | 1/4W | F |
| R652 | 1-249-417-11 | CARBON | 1K | 5% | 1/4W | |
| R653 | 1-249-417-11 | CARBON | 1K | 5% | 1/4W | |

<RELAY>

| | | | |
|---|---|---|---|
| RY601 ⚠ | 1-515-684-31 | RELAY | |
| RY602 | 1-515-684-31 | RELAY | |

<TRANSFORMER>

| | | | |
|---|---|---|---|
| T602 ⚠ | 1-423-585-11 | TRANSFORMER, LINE FILTER (LFT) | |
| T603 ⚠ | 1-423-563-11 | TRANSFORMER, CONVERTER DRIVE | |
| T604 | 1-423-582-21 | TRANSFORMER, FERRITE (SBT) | |
| T605 ⚠ | 1-423-564-11 | TRANSFORMER, CONVERTER (PIT) | |

<THERMISTOR>

| | | | |
|---|---|---|---|
| THP601 ⚠ | 1-808-059-32 | THERMISTOR, POSITIVE | |

<VARISTOR>

| | | | |
|---|---|---|---|
| VDR601 | 1-810-052-21 | VARISTOR | |
| VDR602 | 1-810-052-21 | VARISTOR | |

**********

| | | | |
|---|---|---|---|
| *A-1331-246-A | C BOARD, COMPLETE | | |
| | ********** | | |

<CAPACITOR>

| | | | | | |
|---|---|---|---|---|---|
| C701 | 1-136-601-11 | FILM | 0.01MF | 10% | 630V |
| C704 | 1-162-116-00 | CERAMIC | 680PF | 10% | 2KV |
| C706 | 1-124-916-11 | ELECT | 22MF | 20% | 25V |
| C707 | 1-164-085-11 | CERAMIC | 0.001MF | 10% | 50V |
| C711 | 1-164-083-11 | CERAMIC | 680PF | 10% | 50V |
| C712 | 1-164-082-11 | CERAMIC | 560PF | 10% | 50V |
| C731 | 1-164-083-11 | CERAMIC | 680PF | 10% | 50V |
| C732 | 1-164-081-11 | CERAMIC | 470PF | 10% | 50V |
| C751 | 1-164-083-11 | CERAMIC | 680PF | 10% | 50V |
| C752 | 1-164-082-11 | CERAMIC | 560PF | 10% | 50V |
| C771 | 1-164-083-11 | CERAMIC | 680PF | 10% | 50V |
| C772 | 1-164-083-11 | CERAMIC | 680PF | 10% | 50V |
| C773 | 1-164-083-11 | CERAMIC | 680PF | 10% | 50V |

<CONNECTOR>

| | | |
|---|---|---|
| CN701 | 1-695-915-11 | TAB (CONTACT) |
| CN702 | *1-508-768-00 | PIN, CONNECTOR (5MM PITCH) 6P |
| CN703 | *1-564-509-11 | PLUG, CONNECTOR 6P |

<DIODE>

| | | |
|---|---|---|
| D711 | 8-719-911-19 | DIODE 1SS119 |
| D731 | 8-719-911-19 | DIODE 1SS119 |
| D751 | 8-719-911-19 | DIODE 1SS119 |
| D770 | 8-719-911-19 | DIODE 1SS119 |
| D771 | 8-719-911-19 | DIODE 1SS119 |
| D772 | 8-719-911-19 | DIODE 1SS119 |
| D773 | 8-719-911-19 | DIODE 1SS119 |
| D777 | 8-719-109-71 | DIODE RD3.9ES-B1 |
| D790 | 8-719-911-19 | DIODE 1SS119 |
| D791 | 8-719-911-19 | DIODE 1SS119 |
| D792 | 8-719-911-19 | DIODE 1SS119 |

<JACK>

| | | |
|---|---|---|
| J701 ⚠ | 1-540-071-13 | SOCKET, PICTURE TUBE |

<COIL>

| | | | |
|---|---|---|---|
| L701 | 1-410-671-31 | INDUCTOR | 47UH |

<TRANSISTOR>

| | | |
|---|---|---|
| Q711 | 8-729-926-73 | TRANSISTOR 2SC3271F-N |
| Q712 | 8-729-119-78 | TRANSISTOR 2SC2785-HFE |
| Q731 | 8-729-926-73 | TRANSISTOR 2SC3271F-N |
| Q732 | 8-729-119-78 | TRANSISTOR 2SC2785-HFE |
| Q751 | 8-729-926-73 | TRANSISTOR 2SC3271F-N |
| Q752 | 8-729-119-78 | TRANSISTOR 2SC2785-HFE |
| Q770 | 8-729-119-76 | TRANSISTOR 2SA1175-HFE |
| Q771 | 8-729-200-17 | TRANSISTOR 2SA1091-O |
| Q772 | 8-729-200-17 | TRANSISTOR 2SA1091-O |
| Q773 | 8-729-200-17 | TRANSISTOR 2SA1091-O |

<RESISTOR>

| | | | | | | |
|---|---|---|---|---|---|---|
| R700 | 1-202-549-00 | SOLID | 100 | 20% | 1/2W | |
| R701 | 1-202-846-00 | SOLID | 470K | 20% | 1/2W | |
| R702 | 1-202-844-00 | SOLID | 330K | 20% | 1/2W | |
| R703 | 1-202-838-00 | SOLID | 100K | 20% | 1/2W | |
| R704 | 1-216-370-11 | METAL OXIDE | 1.2 | 5% | 2W | F |
| R706 | 1-202-842-11 | SOLID | 220K | 20% | 1/2W | |
| R710 | 1-202-824-00 | SOLID | 3.3K | 20% | 1/2W | |
| R711 | 1-249-405-11 | CARBON | 100 | 5% | 1/4W | |
| R712 | 1-215-924-00 | METAL OXIDE | 15K | 5% | 3W | F |
| R716 | 1-249-411-11 | CARBON | 330 | 5% | 1/4W | |
| R717 | 1-249-393-11 | CARBON | 10 | 5% | 1/4W | |
| R730 | 1-202-824-00 | SOLID | 3.3K | 20% | 1/2W | |
| R731 | 1-249-405-11 | CARBON | 100 | 5% | 1/4W | |
| R732 | 1-215-924-00 | METAL OXIDE | 15K | 5% | 3W | F |
| R736 | 1-249-411-11 | CARBON | 330 | 5% | 1/4W | |

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.

**C S (KV-20TS29(U)/20TS32)**

| REF.NO. | PART NO. | DESCRIPTION | | | | REMARK |
|---|---|---|---|---|---|---|
| R737 | 1-249-393-11 | CARBON | 10 | 5% | 1/4W | |
| R750 | 1-202-824-00 | SOLID | 3.3K | 20% | 1/2W | |
| R751 | 1-249-405-11 | CARBON | 100 | 5% | 1/4W | |
| R752 | 1-215-924-00 | METAL OXIDE | 15K | 5% | 3W | F |
| R756 | 1-249-411-11 | CARBON | 330 | 5% | 1/4W | |
| R757 | 1-249-393-11 | CARBON | 10 | 5% | 1/4W | |
| R770 | 1-249-433-11 | CARBON | 22K | 5% | 1/4W | |
| R771 | 1-249-409-11 | CARBON | 220 | 5% | 1/4W | F |
| R772 | 1-249-409-11 | CARBON | 220 | 5% | 1/4W | F |
| R773 | 1-249-409-11 | CARBON | 220 | 5% | 1/4W | F |
| R774 | 1-249-437-11 | CARBON | 47K | 5% | 1/4W | |
| R775 | 1-249-417-11 | CARBON | 1K | 5% | 1/4W | |
| R776 | 1-249-409-11 | CARBON | 220 | 5% | 1/4W | |
| R790 | 1-249-417-11 | CARBON | 1K | 5% | 1/4W | |
| R791 | 1-249-413-11 | CARBON | 470 | 5% | 1/4W | |

<VARIABLE RESISTOR>

| | | | |
|---|---|---|---|
| RV701 | ⚠1-241-656-21 | RES, ADJ, METAL FILM 110M | |
| RV702 | 1-230-641-11 | RES, ADJ, METAL GLAZE 2.2M | |

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*1-646-641-11 S BOARD (KV-20TS29(U),20TS32)
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<CAPACITOR>

| | | | | | |
|---|---|---|---|---|---|
| C805 | 1-124-903-11 | ELECT | 1MF | 20% | 50V |
| C806 | 1-137-399-11 | FILM | 0.1MF | 5% | 50V |
| C807 | 1-102-157-00 | CERAMIC | 560PF | 10% | 500V |
| C809 | 1-137-367-11 | FILM | 0.0033MF | 5% | 50V |
| C810 | 1-137-399-11 | FILM | 0.1MF | 5% | 50V |
| C811 | 1-137-399-11 | FILM | 0.1MF | 5% | 50V |
| C812 | 1-137-375-11 | FILM | 0.068MF | 5% | 50V |
| C813 | 1-124-907-11 | ELECT | 10MF | 20% | 50V |
| C814 | 1-124-907-11 | ELECT | 10MF | 20% | 50V |
| C815 | 1-124-907-11 | ELECT | 10MF | 20% | 50V |
| C816 | 1-124-907-11 | ELECT | 10MF | 20% | 50V |
| C817 | 1-124-907-11 | ELECT | 10MF | 20% | 50V |
| C819 | 1-164-070-11 | CERAMIC | 100PF | 5% | 50V |

<CONNECTOR>

| | | |
|---|---|---|
| CN801 | *1-573-979-11 | CONNECTOR, BOARD TO BOARD 11P |

<DIODE>

| | | |
|---|---|---|
| D800 | 8-719-911-19 | DIODE 1SS119 |

<IC>

| | | |
|---|---|---|
| IC801 | 8-759-084-09 | IC Z8612812PSC |

<COIL>

| | | | |
|---|---|---|---|
| L801 | 1-410-470-11 | INDUCTOR | 10UH |

<TRANSISTOR>

| | | |
|---|---|---|
| Q801 | 8-729-119-78 | TRANSISTOR 2SC2785-HFE |
| Q802 | 8-729-119-78 | TRANSISTOR 2SC2785-HFE |

<RESISTOR>

| REF.NO. | PART NO. | DESCRIPTION | | | | REMARK |
|---|---|---|---|---|---|---|
| R801 | 1-249-416-11 | CARBON | 820 | 5% | 1/4W | |
| R802 | 1-249-416-11 | CARBON | 820 | 5% | 1/4W | |
| R803 | 1-249-416-11 | CARBON | 820 | 5% | 1/4W | |
| R804 | 1-249-425-11 | CARBON | 4.7K | 5% | 1/4W | |
| R805 | 1-249-425-11 | CARBON | 4.7K | 5% | 1/4W | |
| R806 | 1-249-423-11 | CARBON | 3.3K | 5% | 1/4W | |
| R807 | 1-249-425-11 | CARBON | 4.7K | 5% | 1/4W | |
| R808 | 1-249-417-11 | CARBON | 1K | 5% | 1/4W | |
| R809 | 1-249-441-11 | CARBON | 100K | 5% | 1/4W | |
| R810 | 1-249-437-11 | CARBON | 47K | 5% | 1/4W | |
| R812 | 1-249-417-11 | CARBON | 1K | 5% | 1/4W | |
| R813 | 1-249-417-11 | CARBON | 1K | 5% | 1/4W | |
| R814 | 1-249-413-11 | CARBON | 470 | 5% | 1/4W | |
| R815 | 1-249-427-11 | CARBON | 6.8K | 5% | 1/4W | |
| R816 | 1-249-429-11 | CARBON | 10K | 5% | 1/4W | |
| R817 | 1-249-433-11 | CARBON | 22K | 5% | 1/4W | |
| R818 | 1-249-417-11 | CARBON | 1K | 5% | 1/4W | |
| R820 | 1-249-433-11 | CARBON | 22K | 5% | 1/4W | |
| R821 | 1-249-433-11 | CARBON | 22K | 5% | 1/4W | |
| R822 | 1-249-429-11 | CARBON | 10K | 5% | 1/4W | |

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MISCELLANEOUS
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| | | |
|---|---|---|
| | ⚠1-426-358-11 | COIL, DEMAGNETIZATION (KV-20TS29(U/C),20TS32,2170RS) |
| | ⚠1-426-368-11 | COIL, DEMAGNETIZATION (KV-21STR2) |
| | ⚠1-451-280-11 | DEFLECTION YOKE (Y21PXA2) |
| | 1 452-032-00 | MAGNET, DISK; 10MM ϕ |
| | 1-452-094-00 | MAGNET, ROTATABLE DISK; 15MM ϕ |
| | 1-452-277-00 | MAGNET, BMC |
| | 1-573-657-11 | PLUG, F-PIN |
| | ⚠1-751-057-11 | CORD, POWER (WITH CONNECTOR) (KV-20TS29(U/C),20TS32,2170RS) |
| | ⚠1-751-056-11 | CORD, POWER (WITH CONNECTOR) (KV-21STR2) |
| SP901 | 1-504-252-11 | SPEAKER (9X5CM) |
| SP902 | 1-504-252-11 | SPEAKER (9X5CM) |
| V901 | ⚠8-738-764-05 | PICTURE TUBE (A51JUH51X) |

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ACCESSORIES AND PACKING MATERIALS
*********************************

| | |
|---|---|
| 1-417-182-11 | CONVERTER (EAC-25) |
| 1-501-372-41 | ANTENNA, TELESCOPIC |
| 1-569-007-11 | ADAPTER, CONVERSION 2P (KV-21STR2) |
| 3-756-515-21 | MANUAL, INSTRUCTION (ENGLISH) |
| 3-756-515-31 | MANUAL, INSTRUCTION (FRENCH) (KV-20TS29(C)) |
| 3-756-515-41 | MANUAL, INSTRUCTION (SPANISH) (KV-20TS32,21STR2,2170RS) |
| *4-039-627-01 | INDIVIDUAL CARTON |
| *4-039-628-01 | CUSHION (UPPER) (ASSY) |
| *4-039-629-01 | CUSHION (LOWER) (ASSY) |
| *4-380-340-01 | BAG, PROTECTION |

REMOTE COMMANDER

| | |
|---|---|
| 1-466-966-11 | REMOTE COMMANDER (RM-Y116) |
| 9-903-826-01 | COVER, BATTERY (FOR RM-Y116) |

Sony Corporation
TV Group



9-964-923-01

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